EXHIBIT O

Forensic Building Science, Inc.

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Storm Damage Report

for

Brabo International

12122 Jef Drive Laredo, TX 78045



Texas Certificate of Authority F-19508 Expires 31 March 2020

12-23-19

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Project Information

Client: Lundquist Law Firm Insurance Carrier: United Fire &

Casualty Company

Project Address:
Brabo International
12122 Jef Drive
Policy #: 85318612
Claim #: 4220117295

Laredo, TX 78045

Webb County

Reported Date of Loss: May 21, 2017

Claim Type: Wind and Hail

FIELD REPORT FOR INITIAL STORM DAMAGE INVESTIGATION

1.0 Background Information:

Forensic Building Science, Inc. (FBS) was contacted by the Lundquist Law Firm to provide an inspection of the exterior and interior of the above-mentioned property and to ascertain the extent of damage caused by wind and hail, including digital mesocyclone detection activity which was reported to have occurred on or around May 21, 2017. FBS retained the services of and worked in conjunction with Brian Johnson P.E.

Prior to inspection of the building FBS/Johnson reviewed the metallurgical testing and findings from Stolk Labs for this site location. Based on our inspection over 80% of the impact markings observed during our inspection had the same visual characteristics as the samples submitted to Stolk Labs prior to our inspection. Based on our onsite observations we did not cut additional holes in the roof assembly and conduct further metallurgical testing.

1.1

NOAA Storm Events Database – May 21, 2017: https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=698319

Event Details:

Event	Thunderstorm Wind
Magnitude	83 kts.
State	TEXAS
County/Area	WEBB
WFO	CRP
Report Source	NWS Storm Survey
NCEI Data Source	CSV
Begin Date	2017-05-21 15:28 CST-6
Begin Location	1S (LRD)LAREDO INTL ARP
Begin Lat/Lon	27.6004/-99.5173
End Date	2017-05-21 15:44 CST-6
End Location	2N LAREDO
End Lat/Lon	27.5742/-99.4725
Deaths Direct/Indirect	0/0 (fatality details below, when available)
Injuries Direct/Indirect	0/0
Property Damage	20.00M
Crop Damage	0.00K
Episode Narrative	Scattered thunderstorms developed over northeast Mexico during the afternoon of the 21st as an upper level disturbance moved across northern Mexico. An intense thunderstorm moved across the Rio Grande into the city of Laredo. Extensive wind damage occurred in the northern parts of Laredo from 80 to 95 mph wind gusts. Five homes were destroyed while around 50 single family and multi-family homes received major damage. Minor damage occurred to around 150 single family and multi-family homes. Major damage occurred to five businesses. Hail from golf ball to baseball size inflicted damage to roofs and cars across the city. After heavy rainfall with this storm, a second storm early in the evening produced heavy rainfall that led to flash flooding

	in the city.
	Damage survey in connection with a severe thunderstorm revealed straight-line wind damage along a line around 5 miles in length and 1 mile in width across northwest Laredo. The damage was from west of the intersection of Interstate 69W and Mines Road to the intersection of east Del Mar Boulevard and McPherson Road. Damage was widespread through this area with numerous large tree limbs snapped, shingle damage to homes, dozens of utility poles bent or broken. The most significant damage occurred at the U.S. Customs facility near World Trade Bridge #3 and to homes in the Villas San Agustin neighborhood. At the U.S. Customs facility, several tractor trailers were overturned, and extensive damage occurred to the metal roof of this facility with several air conditioners blown off. Wind gusts were estimated to be between 80 and 95 mph. The World Trade Bridge was closed to commercial cargo traffic for nearly a week. Within the Villas San Agustin subdivision, 4 new homes that were under construction, slid off their foundations and collapsed. Debris from these properties impacted several nearby homes causing extensive damage. Numerous homes in this subdivision lost shingles. Laredo Fire Station #9, located near Interstate 69 and Mines Road, lost its metal roof. Farther southeast, in the Dominion Del Mar, Terra Hills, and Northview
	subdivisions, numerous large tree limbs were broken, utility poles were bent or broken and a
Event Narrative	cement wall under construction at the Laredo Fire Department was toppled.

1.2 **NOAA Severe Weather Inventory: Filtered Hail Signatures, May 21, 2017:**There were four hail events near the property on this date. The image below shows 4.00-inch hail approximately 5-miles south southeast of the property.



Note: Times are listed in Universal Time (UTC), which is 5 hours ahead of Central Time Zone (CDT).

1.3 NOAA Severe Weather Inventory: Digital Mesocyclone Detection, May 21, 2017:

There were five digital mesocyclones detected near the property on this date. The nearest was approximately 1.7 mile southwest of the property.

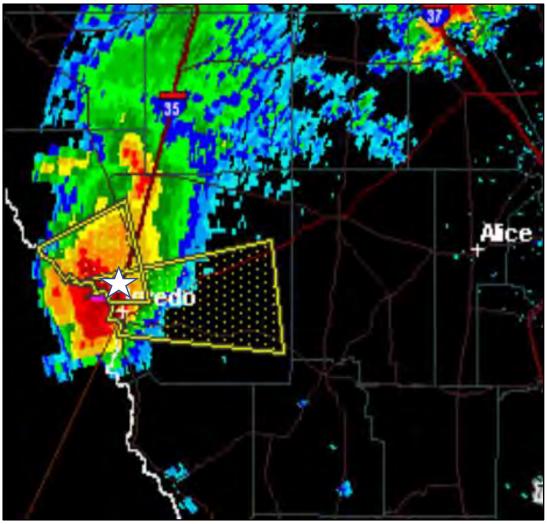


Note: Times are listed in Universal Time (UTC), which is 5 hours ahead of Central Daylight Time (CDT).

1.4 **WEATHER EVENT SUMMARY - Laredo, TX May 21, 2017:** http://www.interactivehailmaps.com/local-hail-map/laredo-tx/#prettyPhoto:

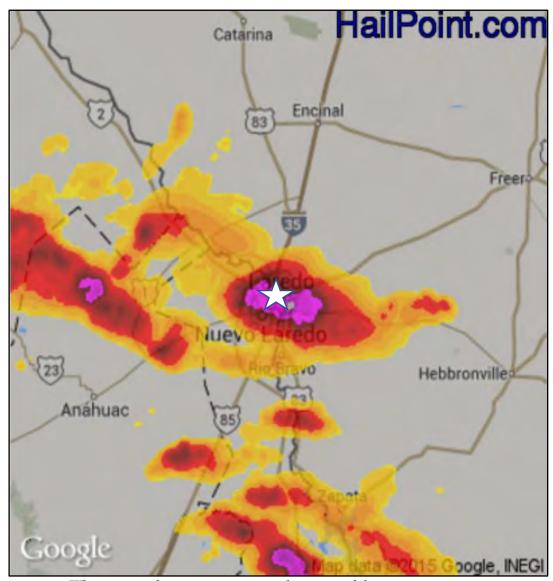
At 4:25 pm CDT, a severe thunderstorm was located over Laredo, moving east at 60 mph (radar indicated). Hazards include 60 mph wind gusts and half dollar size hail. Hail damage to vehicles is expected. Expect wind damage to roofs, siding, and trees.

At 4:28 pm CDT, a severe thunderstorm was located over Doctors Hospital of Laredo, or over Laredo, moving east at 30 mph (radar indicated). Hazards include 60 mph wind gusts and half dollar size hail. Hail damage to vehicles is expected. expect wind damage to roofs, siding, and trees. Locations impacted include, Laredo, Laredo International Airport, Doctors Hospital of Laredo, Laredo Community College and Laredo Country Club.



White star indicates approximate location of the property.

1.5 **WEATHER EVENT SUMMARY - Laredo, TX May 21, 2017:** https://www.hailpoint.com/14093/details/Laredo--TX-May-21.html



White star indicates approximate location of the property.

1.6 News Reports for May 21, 2017 Laredo Storm Event:

- "The most compelling photos from this summer's massive Laredo thunderstorm" https://www.lmtonline.com/galleries/slideshow/Laredo-slammed-by-severe-thunderstorm-145556/photo-12954114.php
- Video of high winds in Laredo, TX May 21, 2017 https://www.youtube.com/watch?v=12kVrUyW9Pw
- "Severe storm closes international border bridge in Laredo, US-Mexico" https://watchers.news/2017/05/22/nuevo-laredo-tornado-thunderstorm/
- "Laredo, TX Extreme Winds Flooding Damage 5/21/2017" https://www.youtube.com/watch?v=T4a5SzyzdQU

1.7 Satellite Image of the Property:



Google Earth imagery dated April 22, 2017 – before storm event



Google Earth imagery dated June 28, 2017 – after storm event

FBS personnel visited the site to take photos and to document damaged locations. These photos are included/attached and are considered part of this report.

1.8 The following claim related documents have been received:

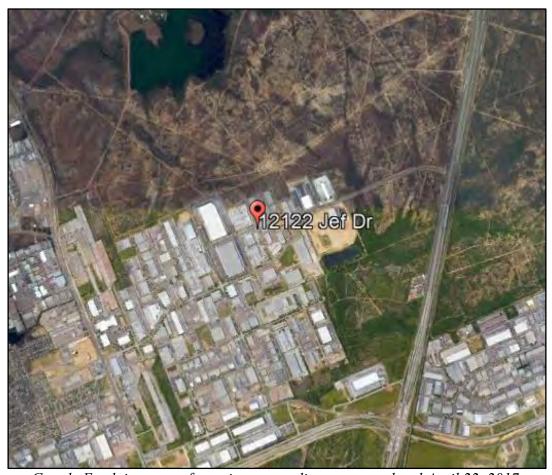
- CC Consulting Group First Report FINAL, dated 11.30.2018
- BSC Forensic Engineer Metallurgical reports, dated 02.22.2019
- UFG Estimate for the amount \$162.61, dated 03.04.2019
- UFG Denial Letter, dated 03.14.2019
- Brabo Intl Repair Receipts & Invoices for the amount of \$4,400.00
- UFG Policy with issue date, 06.30.2016 to 06.30.2017
- Stolk Labs Hail Damage Analysis Report dated, 08.08.2017
- UPC Damage Estimate with photos dated, 05.26.2018 for the amount \$305,554.02
- UPC Roof Leak Report dated, 08.13.2018
- UPC Storm Data & Analysis Report dated 08.22.2018

1.9 The following additional documents were used for reference:

- According to the City of Laredo website, the they have adopted the following building codes:
 - o https://www.cityoflaredo.com/building/
 - o 2012 International Building Code
 - o 2012 International Existing Building Code
 - o 2012 International Fire Code
 - o 2012 International Mechanical Code
 - o 2012 International Plumbing Code
 - o 2012 International Fuel Gas Code
 - o 2015 International Energy Conservation Code
 - o 2011 National Electrical Code
- Photographs from site visits by FBS
- Haag Education Haag Certified Roof Inspector Program, Commercial Edition
- EPA: Moisture Control Guidance for Building Design Construction and Maintenance - Dec 2013 - P100HF07
- ASTM E2128-12 Standard Guide for Evaluating Water Leakage for Buildings
- ASHRAE R-Value Climate Zone Map
- ASTM E108-10a Standard Test Methods for Fire Tests of Roof Coverings
- American Society of Civil Engineers (ASCE) Standard, Guideline for Condition Assessment of the Building Envelope, SEI/ASCE 30-00, 2000.
- American Society of Civil Engineers "Guideline for the Structural Condition Assessment of Existing Buildings", ANSI/ASCE 11-90, ANSI Approved August 1991.
- American Society of Civil Engineers "Minimum Design Loads for Buildings and Other Structure", ANSI/ASCE 7-95, Approved June 1996, ASCE 7-05 and related Commentaries
- ASTM D7053 / D7053M 17 Standard Guide for Determining and Evaluating Causes of Water Leakage of Low-Sloped Roofs

- SPRI, Construction-Generated Moisture and Its Effect on Roofing Systems, August 2008
- AISC: "Steel Construction Manual" American Institute of Steel Construction
- AISI: "Cold Form Steel Design Manual" American Iron and Steel Institute
- RS-738-Insulation Installation Instructions
- ASHRAE R-Value Climate Zone Map
- Code referenced standards: FM 4470, UL 1256, and CAN/ULC S126M
- Texas Board of Professional Engineers, Advisory Ruling October 7, 2004
 "Policy Advisory Opinion Regarding Structural or Mechanical Modifications to Building Roofs"
- ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems. 1998, 2003, 2011. Code referenced standard
- ASTM C1153 10(2015) Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging
- Metal vs. Mother Nature (hail) By: Jim Austin | March 13, 2013
- Hail Damage on Coated Sheet U.S. Steel technical Bulletin # TBP 2012.17
- MCA Metal Roofing Installation Manual October 2014
- MCA Technical Bulletin: Static and Dynamic Analysis of Metal Roof Systems.
- MCA Technical Bulletin: Roof Covering Repair Requirements and the International Codes.
- "Sealing and Flashing Metal Roofs" Rob Haddock, Journal of Light Construction, January 2000.
- FEMA: Metal Roof Systems in High-Wind Regions
- Ice Ball Impact Testing of Siding, Haag Engineering: March 2012
- Specification Test Standard for Impact Resistance Testing of Rigid Roofing Material by Impacting with Freezer Ice Balls, FM4473. July 2005.
- J.E.I. Metallurgical, Inc. Galvalume Steel Roof Hail Damage
- Hail: Sizing It Up! By Vickie Crenshaw and Jim D. Koontz, Western Roofing, May/June 2002.
- Galvalume Steel Roof Hail Damage: J.E.I. Metallurgical, Inc, R. Craig Jerner, Ph.D., P.E.
- United States Steel Technical Bulletin # TBP 2012.17: HAIL DAMAGE ON COATED SHEET STEEL ROOFING
- ASTM E 1514 98 Standard Specification for Structural Standing Seam Steel Roof Panel Systems.
- ASTM E573-01 (2013) Standard Practice for Internal Reflection Spectroscopy.

2.0 **Structure Information:**



Google Earth imagery of terrain surrounding property dated April 22, 2017

2.1 Brabo International Building is located in a Commercial Business District. Representatives at the property noted the building was constructed by ownership around 2002, and the metal roof is original. The area surrounding the property is composed of large commercial warehousing and parking lots, with structures of similar height and construction to the south, east, and west. To the north is open land. Per ASCE 7-10, the terrain surrounding the building is best categorized as Surface Roughness C, leading to a Wind Exposure Category C designation, as defined in the ASCE-7, historically, at the time of loss, and currently.

26.7.2 Surface Roughness Categories

A ground Surface Roughness within each 45° sector shall be determined for a distance upwind of the site as defined in Section 26.7.3 from the categories defined in the following text, for the purpose of assigning an exposure category as defined in Section 26.7.3.

Surface Roughness B: Urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger.

Surface Roughness C: Open terrain with scattered obstructions having heights generally less than 30 ft (9.1 m). This category includes flat open country and grasslands.

Surface Roughness D: Flat, unobstructed areas and water surfaces. This category includes smooth mud flats, salt flats, and unbroken ice.

Source: ASCE 7-10

26.7.3 Exposure Categories

Exposure B: For buildings with a mean height of less than or equal to 30 ft (9.1 m), Exposure B shall apply where the ground surface roughness, as defined by Surface Roughness B, prevails in the upwind direction for a distance greater than 1,500 ft (457 m). For buildings with a mean roof height greater than 30 ft (9.1 m), Exposure B shall apply where Surface Roughness B prevails in the upwind direction for a distance greater than 2,600 ft (792 m) or 20 times the height of the building, whichever is greater.

Exposure C: Exposure C shall apply for all cases where Exposure B or D do not apply.

Exposure D: Exposure D shall apply where the ground surface roughness, as defined by Surface Roughness D, prevails in the upwind direction for a distance greater than 5,000 ft (1,524 m) or 20 times the building height, whichever is greater. Exposure D shall also apply where the ground surface roughness immediately upwind of the site is B or C, and the site is within 600 ft (183 m) or 20 times the building height, whichever is greater, from an Exposure D condition, as defined in the previous sentence.

Source: ASCE 7-10

- 2.2 Temporary repairs have been made after the storm and prior to our assessment, throughout the property. Many of these repairs were made at the expense of the owners. Temporary repairs to the property are as follows:
 - Water remediation
 - Roof repairs
 - Interior water damage repairs

3.0 **Roof Observations:**

The standing seam metal roof showed impact damage throughout rooftop. Hail impacts were observed on parapet wall, air conditioning unit, and electrical equipment. Several other areas were also affected by wind damage. Hail spatter marks and indentations were measured on the metal roofing with some demarcations measuring up to 1.50 inches. Impact damage was observed on the metal roofing consistent with up to 2.00" hail. These impact indentations restricted water flow and collected debris within the indent.

When the indentations caused by hail were cleaned of pollutants, close up photos showed striations consistent with permanent deformation and damage to the galvalume coating and corrosion. Photos taken at non damaged areas did not have these same characteristics. This was consistent with testing performed by Stolk Labs.

The roof assemblies on the buildings were fully assessed. Complete visual inspections were done, and a representative sample of various damage patterns were recorded. Damage on the roof was consistent with the storm event. The extent of damage varied as one would expect. See *Brabo Intl - 12122 Jef - Roof Photo Log 10-16-19 SRD* for documented damages.

3.1 **Rooftop Damage:**

Damage to the roof related to hail, wind and rain includes, but may not be limited to, the following:

- Damage to parapet walls
- Damaged roof
- Damage to air conditioning components
- Damaged by replacement of metal roof section
- Impact damage due to hail was observed throughout the metal roof.
- In a majority of these impacts, dirt and debris could be observed within the impact mark consistent with restricted drainage of water.
- Close-up photos show striations consistent with permanent deformation and damage to the galvalume coating
- Two clean tests were performed on separate impact damaged areas. Once the dirt and debris were removed from the impact damaged area, deformation and premature coating failure of the metal roofing was readily observable.
- Crimping was observed throughout the roof consistent with wind damage.
- Torn flashing was observed on the left elevation rake.
- Oil canning
- Uplift distortion/canning at fasteners



Overview of roof



Overview continued



Damage to AC condenser



Damage to AC unit



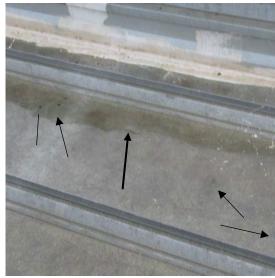
Hail impact damage to sign



Close-up of previous photo



Hail impact on parapet wall



Hail impacts easily seen



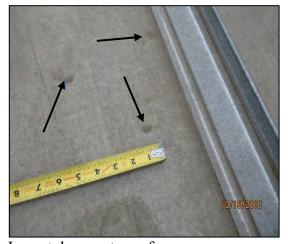
Hail impact chipped concrete on parapet



Flashing separation at panel uplift



Panel shift at wall flashing



Impact damage to roof



Size of impact damage



Typical debris/pollutants at an impact



Temporary repairs to roof



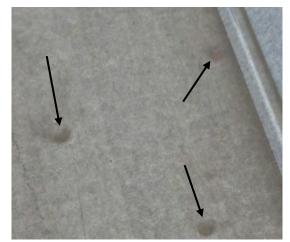
Panel distortion with bent fastener

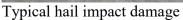


Damaged satellite equipment



Uplifted panel temporary repair cracked







Rivets have been pulled through hole at ____



15 hail impacts in 4 x 2 foot area



Roof panels detached – typical wind damage observed



Roof panels detached -panel shift

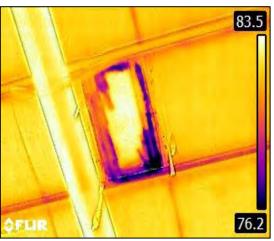
3.2 Infrared Scanning of Roof:

Infrared scanning was performed on the interior during FBS's site inspection. See *Brabo Intl - 12122 Jef - Infra-Red Photo Log 10-16-19 SRD* for documented damages. The following observations were made:

- Anomalies at water damaged locations was observed
- Anomalies on the low slope roof were present



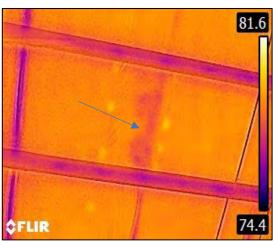
Missing ceiling insulation



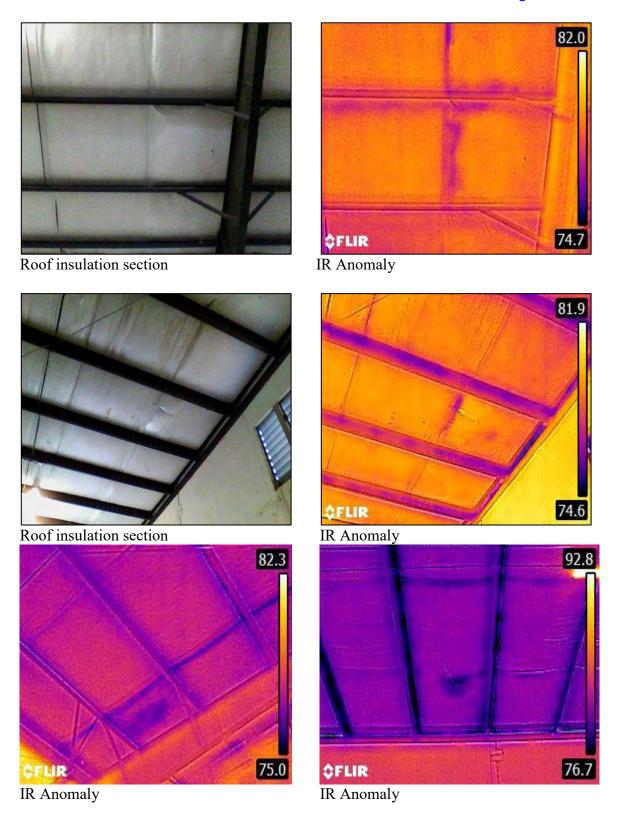
IR image of previous photo



Roof insulation section



IR Anomaly



Exterior Observations:

All accessible areas of the exterior were inspected. A representative number of damaged areas were photographed and documented. See *Brabo Intl - 12122 Jef - Exterior Photo Log 10-16-19 SRD* for documented damaged.

4.1 **Building Façade Damage:**

Damage to the exterior related to hail, wind and rain through wind-created openings includes, but may not be limited to, the following:

- Water damage to painted surfaces
- Tilt up panel out of plane 1"
- Wind damage to windows





Front elevation

Front elevation continued



Window frame separation



Tilt up panel pushed out of original position due to wind



Tilt up panel pushed out of original position



Tilt up panel out of 1" plane



Frame to opening separation



Window frame is damaged

5.0 <u>Interior Observations</u>:

The interior of the building was inspected. A representative number of damaged areas were photographed and documented. See *Brabo Intl - 12122 Jef - Interior Photo Log 10-16-19 SRD* and *Brabo Intl - 12122 Jef - Interior Warehouse Photo Log 10-16-19 SRD* for documented damages.

5.1 **Interior Damage:**

Damage to the interior related to the storm includes, but may not be limited to, the following:

- Water damage to painted gypsum board ceilings, walls, and areas around windows
- Water damage to suspended ceiling tiles
- Water damage to insulation below roof deck
- Water damage to painted surfaces



Overview of office area



Replaced/damaged ceiling tile



Water damage to ceiling tile



Damage to gypsum board



Water damage to paint



Wall to steel weld is broken at Tilt up panel



Close-up of broken weld



Window frame displacement



Window frame displacement



Wall to frame is displaced



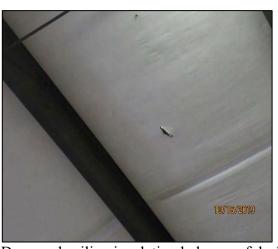
Overview of warehouse area



Overview continued



Damaged/repaired ceiling insulation



Damaged ceiling insulation below roof deck



Temporary repair to ceiling insulation



Missing insulation, exposed roof deck



Insulation is displaced



Displaced insulation



Water damage to wall and paint



Water damaged area on wall, looking up



Tilt up panel shifted



Close-up of previous photo



Light showing through wall joint



Wall is separated about 3/4"-inch

5.2 Window Damages:

Windows consist of painted aluminum clad, and fixed picture type, typical in these types of structures. The pressures exerted on a building due to wind will be primarily perpendicular or out-of-plane to the walls and other surfaces. This means that the deflection and any displacement of the building components will generally be perpendicular, or out-of-plane to the walls as opposed to in-plane. Water leaks were reported to have occurred to the interior of the buildings in some areas at window locations.

We observed displacement of frame to frame butt joints at intersecting members, we also observed cohesion failure at the intersection of the window frame to rough opening intersections. In our opinion, this cohesion failure was consistent with the hurricane force wind damage during the storm. In other instances, there were clear signs of window frames that had been displaced from their original position. This was also consistent with damage caused by wind. In many cases, water damage was observed around windows throughout the interior.



Frame separation



Window frame is displaced to wall



Window frame is displaced

6.0 Review of Stolk Labs Report

Prior to our inspection, the building owner had metallurgical testing done on hail damage samples taken from this roof assembly. In that report, Stolk reached the following conclusions:

Executive Summary:

"Physical damage sustained by metal roof panels in a hailstorm were investigated and the results presented in detail. Scientific evidence showed a significant loss of roof panel integrity in hailstone impact regions. Cross-sections through the impact craters revealed microcracking of the protective coating, loss of its bonding to steel base metal, and corrosion cell development. All these laboratory-documented factors resulted in a direct loss of expected roof performance and lifespan."

Conclusions:

Results of the roof inspections, panel sampling, laboratory testing, physicalchemical analyses, microscopic evaluation of the impact sites, and interpretation of the results led to the following:

- 1) The metallurgical bond between the protective aluminum/zinc roof coating and steel substrate had been permanently damaged at all hailstone impact sites, which diminished the expected lifespan of the roof.
- 2) The corrosion-inhibiting barrier, passively formed as aluminum/zinc oxide, had been everywhere removed by the hailstone impact forces exposing fresh underlying metal
- 3) Localized corrosion pitting accelerated in areas of hail-induced damage along with additional mechanical stress (also increasing the corrosion rate) in the steel roof panels

- 4) Hail-induced depressions had allowed accumulated moisture and corrosive elements thereby increasing surface and subsurface corrosion.
- 5) The presence of sulfur and chlorine ions in the hail depressions or craters had concentrated crevice corrosion attack of the damaged hot-dipped aluminum/zinc layer
- 6) In approximately 8 months following the hailstorm event on April 11, 2016, the roof panels had randomly "lost" at least half of their protective coating thickness due to corrosion
- 7) Due to differential oxygen availability in hail impact sites and loss of lateral corrosion barrier protection, corrosion of the roof panels with hail damage will continue at an accelerated rate in the future; therefore, the panels should be replaced before further deep steel corrosion and abnormally early perforation

7.0 Causation Statement:

- 7.1 At this site consistent with industry methodology and published ASTM standards, we conducted a three-part inspection in this matter. The first part of all inspections consists of a detailed visual on-site analysis looking at the conditions on the site at the time of the inspection primarily focused on the exterior envelope including roof assemblies and foundations on the four sides of the building. The goal of the visual inspection is to look for anything indicative of this building changing from its original construction. The second part of our inspection is the document review which includes analyzing the maintenance and service history when available, various damage patterns indicative of pre or post storm events and building blueprints when available. In addition, we interview tenants, building owners, and others who may have been there before and after the event occurred. The next phase is to conduct more detailed inspection which include quantification of damages (e.g. number of hail hits within a quantifiable area of a roof assembly and accounting for wind speeds), separating out pre-storm damage and other types of damage, including defects in design, improper installation or lack of maintenance. This condition assessment is essential in developing a damage causation theory and scope of repairs. In some instances, invasive inspections are performed. Ensuing damage to the interior elements was also documented. This damage is also segregated between damage that existed before the storm and new damage that has occurred as a result of the storm.
- 7.2 Based upon our review of the documents submitted to us for review prior and after our inspection and on-site inspection, and the observations collected by FBS from the property during our inspection, we have concluded that the roof, exterior widows, one tilt up panel and some interior finishes were damaged by hail, wind and rain through wind-created openings that occurred on May 21, 2017. All damaged materials must be replaced.

- 7.3 Based upon our training, education, experience, the information gathered during our inspections, the testing performed by Stolk Labs and upon a reasonable degree of building science and engineering certainty, it is more likely than not that, the observed damage is a result of the subject storm event. On the reported date of loss, there was sufficient wind, rain and hail to cause the above-referenced damage.
- 7.4 Based on our interior inspection of the buildings and the information provided to FBS regarding when the leaking began in relation to the date of loss, including the location of these leaks, we have concluded that it is more likely than not, that the wind and ensuing water damage we observed was a result of the above referenced storm event. FBS was on site when the area was experiencing light rain—as such, we were able to independently correlate and validate the location of several of the leaks (previously identified by UPC and the onsite personnel in the Roof Leak Report) as the same general location of leaks which occurred for the first time after May 2017.
- 7.5 Based on the on-site data and measurement of impact marks, 1.25 to 2-inch hail from the storm event fell at this location and was of sufficient size and density to damage the roof metals.
- 7.6 In addition, winds reported by numerous sources as high as 90 miles per hour caused noticeable roof panel uplift, panel separation, permanent panel distortion and deformation, compression, bending, or near pullover at fasteners and storm created openings, primarily at seams. While damage from the hail was sufficient to warrant replacement of the roof assembly, damage from the wind was also sufficient to require full replacement. In our opinion, interior water damage resulted from the wind damaged panels and not from the hail damage. Failure to completely remove and replace the damaged assemblies at the property will result in additional damage to the interior due to water intrusion.
- 7.7 Damage to the galvanized panels identified by Stolk utilizing *Visual Examination* & *Photo Documentation*, Stereomicroscopy, FTIR Analysis, Scanning Electron Microscopy & Metallography, and EDX Composition Analyses concluded that the samples submitted were damaged by hail and damaged panels should be replaced.
- 7.8 FBS/Johnson also performed <u>Visual Examination & Photo Documentation</u> and identified "impact markings" from hail consistent with the "impact damage" identified by Stolk Labs in its testing. These impact locations covered over 80% of the roof panel surfaces. Based on our findings entire replacement of the roof assembly is required.

8.0 <u>Conclusions</u>:

- 8.1 Hail and wind caused damage to the roof system and exterior on May 21, 2017. According to our review of NOAA reports, hail between 1.00" and 4.00" in size fell within the vicinity of the property. Since the May 21, 2017 storm, multiple locations in the buildings are reported to leak after rain events. FBS witnessed this leaking during its inspection. In our opinion, full replacement of the roof system, metal flashings, siding, gutters and downspouts will be required.
- 8.2 Damage to the metal roof panels from hail covered 80% of the overall roof area. The indentations were consistent with damaged samples from the same roof submitted to and tested by Stolk Labs. Stolk concluded these impact locations were damaged:
 - 1) The metallurgical bond between the protective aluminum roof coating and steel substrate had <u>been permanently damaged at hailstone impact sites</u>, which diminished the expected lifespan of the roof.
 - 2) A corrosion-inhibiting barrier, passively formed as aluminum oxide, had been removed by the hailstone impact forces and <u>exposed underlying coating to new corrosive attack</u>.
 - 3) Accelerated localized corrosion pitting due to hail-induced damage along with additional mechanical stress <u>increased the corrosion rate</u> in the damaged steel roof panels.
 - 4) Hail-induced depressions had allowed accumulated moisture and corrosive elements thereby increasing surface and subsurface corrosion. Much <u>pinpoint</u> and crevice corrosion was observed at hail impact sites.
 - 5) The presence of sulfur and chlorine ions in the hail depressions or craters had additionally accelerated corrosive attack of damaged hot-dipped aluminum layer.
 - 6) Since the hailstorm event, the roof panels had randomly "lost" more than half of their protective coating thickness due to corrosion where hail struck.
 - 7) Due to differential oxygen availability in hail impact sites and loss of lateral corrosion barrier protection, corrosion of the roof panels with hail damage will continue in the future and, therefore, the panels should be replaced before imminent deep steel corrosion and perforation.
- 8.3 Damage to these metal roof panels from hail created a variety of indentations that continue to collect pollutants, sediment and water. According to the MCA Roofing Installation Manual Circa 2014, among other sources cited above, even small

amounts of trapped water can cause premature corrosion to occur at the impact locations:

("Corrosion is the process in which a solid, especially a metal, degrades and changes by a chemical action. For example, oxidation of iron in the presence of water by an electrolytic process is a form of corrosion. It forms iron oxide or rust. Oxidation requires both moisture and air in order to occur...Oxidation can occur very rapidly when excess water remains on a metal surface."). E.G. For example, when indentations made by hail slow water run off at the indentation location allowing for pollutants to collect.

- 8.4 Damage caused by wind included metal crimping, permanent panel distortion, uplift, seam separation, and storm created openings in the roof assembly. Damage from wind requires full replacement of the roof panels. Based on similar projects, the age and condition of the panels, and the roofing company's manufacturer, surgical repairs to individual panels will likely damage surrounding panels and any underdeck insulation.
- 8.5 Any damage to structural elements (roof deck, clips, fasteners, purlins) will require sealed details from a licensed civil or structural engineer before reuse.
- Hail-caused Indentations are less ductile (and more prone to puncture from future hail and normal weathering effects) than the metal prior to hail impact as the areas are permanently deformed by stressing the metal into the strain-hardening region. These indentations are not expected to diminish with time.

9.0 Code Discussion:

9.1 **2015 IECC (International Energy Conservation Code) Definitions**

ROOF ASSEMBLY: "A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof covering, underlayment, roof deck, insulation, vapor retarder and interior finish."

The key component here is that the energy code includes the "interior finish". Because the roof membrane in this case creates the vapor and air barrier above the conditioned space all water damaged elements in the assembly must be replaced. Including roof deck insulation.

Interior Finish is defined as:

INTERIOR FINISH: "Interior finish includes interior wall and ceiling finish and interior floor finish."

Interior wall and Ceiling Finish is defined as:

INTERIOR WALL AND CEILING FINISH: "The exposed interior surfaces of buildings, including but not limited to: fixed or movable walls and partitions; toilet

room privacy partitions; columns; ceilings; and interior wainscoting, paneling or other finish applied structurally or for decoration, acoustical correction, surface insulation, structural fire resistance or similar purposes, but not including trim."

If water damage has occurred to the interior finish, for example the ceiling tiles (which are for decoration, acoustical corrections and provide fire resistance) which require replacement, then the remaining parts of the roof assembly up to the roof covering (working inside out) must also be examined and likely replaced. Coring will typically reveal either presence of water or signs that water did enter. Most of, if not all of the products used in the "roof assembly" are not intended by the manufacturer to get wet and water damage can be identified. In this case, the water damage has occurred requiring replacement of the roof assembly insulation and the roof covering in order to access this insulation.

9.2 The 2012 IBC (International Building Code):

The following provision in the code regarding roof recovering is applicable to this property:

1511.3.1.1 Exceptions. A *roof recover* shall not be permitted where any of the following conditions occur:

- Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
- Where the existing roof covering is slate, clay, cement or asbestos-cement tile.
- Where the existing roof has two or more applications of any type of roof covering.

9.3 The 2012 IEBC (International Existing Building Code):

The following provision in the code regarding roof recovering is applicable to this property:

[BS] 705.3 Roof replacement

Roof replacement shall include the removal of all existing layers of roof coverings down to the roof deck.

Exception: Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section 1507 of the *International Building Code*.

[BS] 705.3.1 Roof recover

The installation of a new roof covering over an existing roof covering shall be permitted where any of the following conditions occur:

- 1. The new roof covering is installed in accordance with the roof covering manufacturer's approved instructions.
- 2. Complete and separate roofing systems, such as standing-seam metal roof panel systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, are installed.
- 3. Metal panel, metal shingle and concrete and clay tile roof coverings are installed over existing wood shake roofs in accordance with Section 705.4.
- 4. A new protective *roof coating* is applied over an existing protective *roof coating*, a metal roof panel, metal roof shingles, mineral-surfaced roll roofing, a built-up roof, modified bitumen roofing, thermoset and thermoplastic single-ply roofing or a spray polyurethane foam roofing system.

[BS] 705.3.1.1 Exceptions

A roof recover shall not be permitted where any of the following conditions occur:

- 1. The existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
- 2. The existing roof covering is slate, clay, cement or asbestos-cement tile.
- 3. The existing roof has two or more applications of any type of roof covering.

10.0 Requirements / Recommendations:

Based on the findings during the investigation, we recommend the following steps be taken:

Based on the findings during the investigation, we recommend the following steps be taken:

- 1. Follow all applicable building codes.
- 2. Remove all existing roofing materials down to the roof purlins.
- 3. Remove all insulation which will be damaged during reroofing.
- 4. Replace all roofing materials, cap flashings and appurtenances with new. Include adding additional insulation to meet current Energy Codes.

NOTE: THIS WILL REQUIRE INSTALLATION OF STANCHIONS ONTO PURLINS TO ALLOW FOR 3" FOAM INSULATION TO MEET ENERGY CODES. THIS WILL REQUIRE ADDITIONAL ENGINEERING DESIGN FEES TO RETROFIT THE STRUCTURE FOR WIND LOAD.

- 5. Alternate construction techniques may be acceptable provided a licensed design professional approves and signs and stamps plans and or shop drawings for these repairs. Means and methods are the contractor's responsibility.
- 6. Conform to any special inspection and testing schedules issued by the engineer.
- 7. Contractor is solely responsible for adherence to all applicable safety requirements for work at heights.
- 8. Contractor shall remain on alert for signs of mold during repairs and construction.
- 9. Energy code requirements have not been reviewed. Scope of work for this project is structural only. Integration of existing building systems with vapor retarders, application of sealants, flashing and other items are the responsibility of the contractor.
- 10. Stability during construction is the responsibility of the Contractor. Structure as detailed is intended to be stable once all sheathing and fasteners are in place.
- 11. Remove water damaged interior materials and effect repairs pursuant to current published guidelines by ANSI/IICRC S500 "Water Damage Restoration." This will include interior environmental controls.

11.0 Authors Statement:

This report is jointly authored by Brian Craig Johnson, PE, Jeremy Lansdown and Tom Irmiter, of Forensic Building Science, Inc. All three have reviewed each other's contributions to this report and concur with the overall content of the report.

- 11.1 Jeremy Lansdown contributed to the background information and oversaw site investigations. In addition, he assisted in compiling the estimate.
- 11.2 Brian Craig Johnson contributed to the Causation and Engineering analysis and failure mechanisms to the structure as a direct result the storm and evaluated repairability issues.
- 11.3 Tom Irmiter drafted the report and contributed to the weather data, the documents section, the Causation analysis, code review and damage model with estimated costs to restore the Building to a preloss condition.

Discovery is ongoing. Additional testing and inspections may need to be performed and additional and/or supplemental information and opinions may be contained in future reports issued by Forensic Building Science, Inc. This report is the exclusive property of the client noted previously and cannot be relied upon by a third party. Copies of this report are released to third parties only by written permission of the client.

Please contact our office should you have any questions or need additional information.

Respectfully submitted,

Jeremy Lansdown

December 23rd, 2019

Date

Project Manager, Forensic Building Science, Inc.

Tom Irmiter, President, Forensic Building Science, Inc. Building Causation, Code and Damages Consultant

Date

December 23rd, 2019



Insured: Brabo International - 12122 Jeff Dr.

Property: 12122 Jeff Dr.

Laredo, TX 78045

Estimator: Tom Irmiter

Claim Number: Type of Loss: Wind/Hail

Date of Loss: 5/21/2017 12:00 AM Date Received:

Date Inspected: 10/16/2019 12:00 AM Date Entered: 11/12/2019 9:24 AM

Price List: TXCC8X_NOV19

Restoration/Service/Remodel

Estimate: BRABOINTERNATIONAL-2

OPENING STATEMENT:

OPCC (OPINION OF PROBABLE CONSTRUCTION COST)

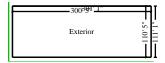
1). This Estimate is predicated on the quantity survey which precedes herewith. The survey is subject to mechanical and human error. This estimate is now, therefore subject to revision contingent on the discovery of mechanical and / or human error.



BRABOINTERNATIONAL-2

Exterior

Exterior Height: 16'

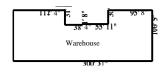


13146.67 SF Walls 46317.68 SF Walls & Ceiling 3685.67 SY Flooring 821.67 LF Ceil. Perimeter 33171.01 SF Ceiling 33171.01 SF Floor 821.67 LF Floor Perimeter

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
1. Clean with pressure/chemical spray	13,146. SF 67	0.32	337.36	843.10	5,387.39	(0.00)	5,387.39
2. Stucco patch / small repair - ready for color	78.00 EA	166.44	85.28	2,613.52	15,681.12	(0.00)	15,681.12
Allowance to repair damaged stucco							
3. Seal & paint stucco	13,146. SF 67	1.16	213.63	3,092.74	18,556.51	(0.00)	18,556.51
Allowance to paint stucco repair areas an	d tilt wall						
DOORS & WIN	DOWS						
4. R&R Storefront - aluminum anodized frame - Double pane	25.03 SF	26.58	29.94	139.04	834.27	(0.00)	834.27
Totals: Exterior			666.21	6,688.40	40,459.29	0.00	40,459.29
Total: Exterior			666.21	6,688.40	40,459.29	0.00	40,459.29

Interior

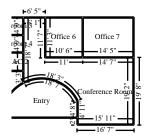
Warehouse Height: 10'



8833.39 SF Walls 38905.32 SF Walls & Ceiling 3341.33 SY Flooring 883.34 LF Ceil. Perimeter 30071.93 SF Ceiling 30071.93 SF Floor 883.34 LF Floor Perimeter

DESCRIPTION	QUANTITY U	INIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
5. R&R Vinyl-faced/laminated insulation - 3"		0.96	977.34	5,969.28	35,815.68	(0.00)	35,815.68
Totals: Warehouse			977.34	5,969.28	35,815.68	0.00	35,815.68



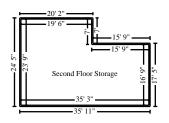


Conference Room Height: 9'

1099.35 SF Walls1587.45 SF Walls & Ceiling54.23 SY Flooring122.16 LF Ceil. Perimeter

488.11 SF Ceiling 488.11 SF Floor 122.16 LF Floor Perimeter

DESCRIPTION QUANTITY UNIT PRICE TAX O&P **RCV** DEPREC. ACV ----- WALLS -----0.00 6. Drywall - Labor Minimum 1.00 EA 302.57 60.52 363.09 (0.00)363.09 7. Drywall tape joint/repair - per LF 20.00 LF 0.36 22.52 135.08 (0.00)135.08 5.61 ----- PAINTING -----8. Seal/prime then paint the walls (2 coats) 1,099.35 SF 0.82 11.43 182.58 1,095.48 (0.00)1,095.48 ----- CEILINGS-----9. R&R Suspended ceiling tile - 2' x 4' 48.00 SF 1.73 3.06 17.24 103.34 (0.00)103.34 ----- ELECTRICAL -----10. R&R Fluorescent - acoustic grid 1.00 EA 221.48 4.58 45.22 271.28 (0.00)271.28 fixture - four tube, 2'x 4' ----- HVAC - ACCESSORIES -----11. R&R Ceiling diffuser - square, lay-in -1.00 EA 110.07 4.35 22.90 137.32 (0.00)137.32 24" **Totals: Conference Room** 2,105.59 23.78 350.98 2,105.59 0.00



Second Floor Storage

1062.00 SF Walls 1788.94 SF Walls & Ceiling 80.77 SY Flooring 118.00 LF Ceil. Perimeter Height: 9'

726.94 SF Ceiling 726.94 SF Floor 118.00 LF Floor Perimeter

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
CEILINGS							
12. R&R 5/8" drywall - type C - hung, taped, light texture	64.00 SF	2.60	2.04	33.68	202.12	(0.00)	202.12
13. Mask and prep for paint - plastic, paper, tape (per LF)	118.00 LF	1.19	1.76	28.44	170.62	(0.00)	170.62
14. Seal/prime then paint the ceiling (2 coats)	726.94 SF	0.82	7.56	120.74	724.39	(0.00)	724.39
Totals: Second Floor Storage			11.36	182.86	1,097.13	0.00	1,097.13



Shipping Receiving Office

Height: 9'



649.61 SF Walls 925.70 SF Walls & Ceiling 30.68 SY Flooring 72.18 LF Ceil. Perimeter

276.09 SF Ceiling276.09 SF Floor72.18 LF Floor Perimeter

DESCRIPTION QUANTITY UNIT PRICE TAX O&P **RCV** DEPREC. ACV ----- WALLS AND CEILINGS-----15. R&R 5/8" drywall - type C - hung, 96.00 SF 2.60 3.06 50.54 303.20 (0.00)303.20 taped, light texture ----- PAINTING -----16. Seal/prime then paint the walls and 925.70 SF 0.82 922.44 (0.00)9.63 153.74 922.44 ceiling (2 coats) **Totals: Shipping Receiving Office** 12.69 204.28 1,225.64 0.00 1,225.64 **Total: Interior** 1,025.17 6,707.40 40,244.04 0.0040,244.04

Roof

Metal Roof



33135.08 Surface Area 822.17 Total Perimeter Length 331.35 Number of Squares

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
ROOF COVERING							
17. Additional charge for high roof (2 stories or greater)	331.35 SQ	4.10	0.00	271.70	1,630.24	(0.00)	1,630.24
18. R&R Metal roofing - High grade	33,135. SF 08	7.91	4,458.33	53,311.36	319,868.17	(0.00)	319,868.17
19. Additional charge for high roof (2 stories or greater)	331.35 SQ	15.15	0.00	1,004.00	6,023.95	(0.00)	6,023.95
20. R&R Insulation - ISO board, 3"	364.49 SQ	446.59	3,410.44	33,237.60	199,425.63	(0.00)	199,425.63
21. Add for tapered insulation*	364.49 SQ	224.52	1,591.38	16,685.34	100,112.01	(0.00)	100,112.01
*10% waste added, tapered insulation requ	ired for code co	ompliant roof slope	2				
22. Membrane roofing - cant strips - perlite	e 822.17 LF	2.95	24.05	489.90	2,939.35	(489.89)	2,449.46
23. R&R Flashing - L flashing - galvanized	822.17 LF	3.71	68.94	623.84	3,743.03	(0.00)	3,743.03
24. R&R Counterflashing - Apron flashing	822.17 LF	8.03	67.34	1,333.86	8,003.23	(0.00)	8,003.23
25. R&R Eave trim for metal roofing - 26 gauge	602.00 LF	5.42	84.52	669.48	4,016.84	(0.00)	4,016.84

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CONTINUED - Metal Roof

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV		
26. R&R Flashing - pipe jack	8.00 EA	54.83	5.99	88.92	533.55	<0.00>	533.55		
DOORS & WINI	OWS								
27. R&R Skylight - single dome fixed, 12. 6 - 15.5 sf	2.00 EA	405.22	36.37	169.36	1,016.17	(0.00)	1,016.17		
HVAC - CONDENSER/AIR HANDLER REPLACEMENT									
28. R&R Central air - condenser unit - 3 ton - 16-21 SEER	3.00 EA	2,715.87	436.61	1,716.84	10,301.06	(0.00)	10,301.06		
ELECTRICAL									
29. Digital satellite system - Detach & reset	1.00 EA	28.45	0.00	5.70	34.15	(0.00)	34.15		
30. R&R #10 gauge copper wire - stranded or solid	30.00 LF	1.22	0.59	7.44	44.63	(0.00)	44.63		
31. PVC schedule 40 conduit, 2"	20.00 LF	7.00	0.96	28.20	169.16	(0.00)	169.16		
32. R&R Disconnect box - 60 amp - non fused	3.00 EA	192.13	3.12	115.90	695.41	(0.00)	695.41		
33. Junction box	3.00 EA	113.42	1.79	68.42	410.47	(0.00)	410.47		
Totals: Metal Roof			10,190.43	109,827.86	658,967.05	489.89	658,477.16		

Parapet Height: 2' 6"

Parapet

2053.75 SF Walls 35215.56 SF Walls & Ceiling 3684.65 SY Flooring 821.50 LF Ceil. Perimeter 33161.81 SF Ceiling 33161.81 SF Floor 821.50 LF Floor Perimeter

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
PARAPET							
34. Concrete patch / small repair	89.00 EA	83.85	11.57	1,494.86	8,969.08	(0.00)	8,969.08
35. Epoxy injection - concrete repair (per LF of crack)	312.00 LF	33.89	34.07	2,121.56	12,729.31	(0.00)	12,729.31
36. Two coat stucco over masonry	985.80 SF	4.29	0.00	845.82	5,074.90	(0.00)	5,074.90
37. Waterproof concrete & masonry paint	4,929.00 SF	1.33	169.80	1,345.08	8,070.45	(0.00)	8,070.45
Totals: Parapet			215.44	5,807.32	34,843.74	0.00	34,843.74
Total: Roof			10,405.87	115,635.18	693,810.79	489.89	693,320.90



General Conditions

DESCRIPTION	QUANTITY	UNIT PRICE	TAX	O&P	RCV	DEPREC.	ACV
38. Temporary Repairs*	1.00 EA	4,400.00	0.00	880.00	5,280.00	(0.00)	5,280.00
39. Debris chute mounting hardware - per week	6.00 WK	25.00	0.00	30.00	180.00	(0.00)	180.00
4 each @ 4 weeks							
40. Debris chute - per week - 30" x 4' section	6.00 WK	15.60	0.00	18.72	112.32	(0.00)	112.32
4 each @ 4 weeks							
41. Debris chute hopper - per week - 30" x 4' section	6.00 WK	28.80	0.00	34.56	207.36	(0.00)	207.36
4 each @ 4 weeks							
42. R&R Temporary fencing	868.00 LF	6.86	0.00	1,190.90	7,145.38	(1,032.92)	6,112.46
43. Safety Monitor - per hour*	90.00 HR	33.49	0.00	602.82	3,616.92	(602.82)	3,014.10
*Safety monitor for pedestrian and traffic	protection durin	g normal work ho	ours, 1 month	!			
44. Scaffold - per section (per month)	2.00 MO	112.88	0.00	45.16	270.92	(45.15)	225.77
*20 sections of scaffolding for 1 month for	r pedestrian prot	ection along sidev	valks				
45. R&R Stop/Traffic sign - aluminum - up to 36"	3.00 EA	130.51	18.87	82.10	492.50	(76.71)	415.79
46. Scissor lift - 26' platform height (per week)	6.00 WK	517.50	0.00	621.00	3,726.00	(0.00)	3,726.00
47. Barricade and warning device - setup and takedown	20.00 HR	53.51	0.00	214.04	1,284.24	(214.04)	1,070.20
*Allowance for 2 workers, 20 hours per we	orker.						
48. Telehandler/forklift (per month) - no operator	2.00 MO	3,063.00	0.00	1,225.20	7,351.20	(0.00)	7,351.20
49. Warning sign, 4' x 4' on a 6' post (per day)	43.00 DA	2.36	0.00	20.30	121.78	(0.00)	121.78
6 signs for 30 days							
50. Caution tape	1,800.00 LF	0.07	1.17	25.44	152.61	(0.00)	152.61
51. Traffic cones (per unit, per day)	120.00 DA	0.70	0.00	16.80	100.80	(16.80)	84.00
80 cones for 30 days							
52. Electrician - per hour	24.00 HR	98.02	0.00	470.50	2,822.98	(470.50)	2,352.48
*Electrician allowance to assess and repai	r affected electri	cal components.					
53. Job-site moving/storage container - 20' long - per month		220.00	14.30	46.86	281.16	(46.86)	234.30
54. Temporary toilet (per month)	2.00 MO	147.38	0.00	58.96	353.72	(58.95)	294.77
Addresses (4) Job-Site Toilets for a total of	(1) Months						
55. Temporary construction office - portable (trailer)	2.00 MO	279.08	0.00	111.64	669.80	(111.63)	558.17
56. Cleaning Technician - per hour	80.00 HR	37.15	231.82	594.40	3,798.22	(633.04)	3,165.18
Allowance addresses Progressive Daily Job			struction Clea	an-Up			
57. Dumpster load - Approx. 40 yards, 7-8 tons of debris	-	842.02	0.00	673.62	4,041.70	(0.00)	4,041.70
58. General Demolition - per hour	160.00 HR	38.77	0.00	1,240.64	7,443.84	(0.00)	7,443.84
A 11					4 11.	.1 1 4	.4• 4 .

Addresses additional labor necessary to haul debris to trash shoots and larger debris down building to ground level and transporting to dumpster.



CONTINUED - General Conditions

DESCRIPTION	QUANTITY UN	IT PRICE	TAX	O&P	RCV	DEPREC.	ACV
59. Commercial Supervision / Project Management - per hour	67.00 HR	59.52	0.00	797.56	4,785.40	(797.57)	3,987.83

^{*24} hours per week project supervision through the duration of repairs

CONSTRUCTION MANAGER (PROJECT MANAGER) DUTIES & RESPONSIBILITIES

- 1). Reconstruction planning. Working with architects, engineers, consultants, and government officials on design studies, site development, building systems, building codes and permits, planning and scheduling, cost estimating, and value engineering to insure the best quality project possible for the allotted budget.
- 2) Bidding process. Supervise the bidding process which includes qualifying bidders, holding pre bid conferences, evaluating bids and making recommendations.
- 3). Set-Up and manage site. Insure that the site is functional and efficient. This includes things like traffic flow, parking, deliveries, storage, equipment, communications, safety, trash pick-up, portable toilets and drinking water.
- 4). Administration. Keep track of project cost, time and quality. Keep records to document these things. Example of records are; reports, submittal, shop drawings, change orders, Inspections records, time cards, and payroll records, Cost accounting.
- 5). Planning and Scheduling. Organizing the sequence of events and allotting the time frame to them. Monitor the work to ensure that it is proceeding according to plan and that the prescribed levels of quality, performance and safety are being met. Monitoring is done through observation inspection and testing. If the work does not proceed according to plan, the CM will make changes to bring the project back in line (Subject to contractor/owner approval). In addition to this, the CM will see the contractor documents the materials, processes and labor used to ensure that they conform to the project specifications. The Construction Manager's job is to oversee the entire project from start to finish and to make it run as smoothly as possible and keep the owner informed of the status of the job.

XACTWARE DEFINITION OF WHATS INCLUDED AND NOT INCLUDED.

Construction Supervisor (Superintendent) Duties and Responsibilities: (OSHA 1910.1200 Appendix E Item #2 Identify responsible staff) (OSHA 1926.32 definitions (F) Competent person (M) Qualified person (Refer to OSHA regulations)

- 1). Report and coordinate with the general contractor and the Construction manager.
- 2). Coordinate the various sub-contractors work processes and movements around the site.
- 3). Oversee the work of varies tradesman to ensure that is being done to specifications and in a timely manner.
- 4). Work with the sub-contractors to see the materials and equipment for each specialty are delivered and stored on site properly and in time and sequence to be ready as needed.
- 5). Keep track of all persons entering the site. See that they are authorized to be there. If not see that they leave immediately. If they are authorized see that they are safe and accommodated to the extent necessary to complete their function.
- 6). Keep a log of all persons entering and leaving the site, as well as all the equipment and materials delivered to the site.
- 7). The super will normally be the first person on site in the morning. He will open the site, inspect the grounds and equipment before workers arrive. As work crews arrive, he will meet with them and pass along pertinent information as well as assign work areas and tasks to be completed. Periodically the Super will check the work in progress, deal with minor conflicts and problems, and generally keep things going as smooth as possible. Additionally, he will enforce health and safety rules, and provide information, help, and possibly training anyone on site that needs these things for the proper performance of their job. At the end of the day, the super will inspect the grounds and equipment before closing the site for the night.

Totals: General Conditions	266.16	9,001.22	54,238.85	4,106.99	50,131.86
Line Item Totals: BRABOINTERNATIONAL-2	12,363.41	138,032.20	828,752.97	4,596.88	824,156.09



Grand Total Areas:

32,756.84	SF Walls	100,001. 87	SF Ceiling	132,758. 71	SF Walls and Ceiling
100,001. 87	SF Floor	11,111.32	SY Flooring	3,495.75	LF Floor Perimeter
0.00	SF Long Wall	0.00	SF Short Wall	3,495.75	LF Ceil. Perimeter
100,001. 87	Floor Area	101,082. 15	Total Area	32,851.36	Interior Wall Area
31,157.63	Exterior Wall Area	2,975.56	Exterior Perimeter of Walls		
,	Surface Area Total Ridge Length		Number of Squares Total Hip Length	0.00	Total Perimeter Length



Summary for Dwelling

Line Item Total	678,357.36
Material Sales Tax	11,779.93
Cleaning Mtl Tax	8.55
Storage Rental Tax	14.30
Subtotal	690,160.14
Overhead	69,016.10
Profit	69,016.10
Cleaning Sales Tax	560.63
Replacement Cost Value	\$828,752.97
Less Depreciation	(4,596.88)
Actual Cash Value	\$824,156.09
Net Claim	\$824,156.09
Total Recoverable Depreciation	4,596.88
Net Claim if Depreciation is Recovered	\$828,752.97

Tom Irmiter



Recap of Taxes, Overhead and Profit

	Overhead (10%)	Profit (10%)	Material Sales Tax (6.5%)	Cleaning Mtl Tax (6.5%)	Cleaning Sales Tax (6.5%)	Manuf. Home Tax (5%)	Storage Rental Tax (6.5%)	Total Tax (6.5%)
Line Ite	ems							
	69,016.10	69,016.10	11,779.93	8.55	560.63	0.00	14.30	0.00
Total								
	69,016.10	69,016.10	11,779.93	8.55	560.63	0.00	14.30	0.00



Recap by Room

Estimate: BRABOINTERNATIONAL-2

Area:	Exterior		
	Exterior	33,104.68	4.88%
	Area Subtotal: Exterior	33,104.68	4.88%
Area:	Interior		
	Warehouse	28,869.06	4.26%
	Conference Room	1,730.83	0.26%
	Second Floor Storage	902.91	0.13%
	Shipping Receiving Office	1,008.67	0.15%
-	Area Subtotal: Interior	32,511.47	4.79%
Area:	Roof		
	Metal Roof	538,948.76	79.45%
	Parapet	28,820.98	4.25%
,	Area Subtotal: Roof	567,769.74	83.70%
	General Conditions	44,971.47	6.63%
Subtot	tal of Areas	678,357.36	100.00%
Total		678,357.36	100.00%

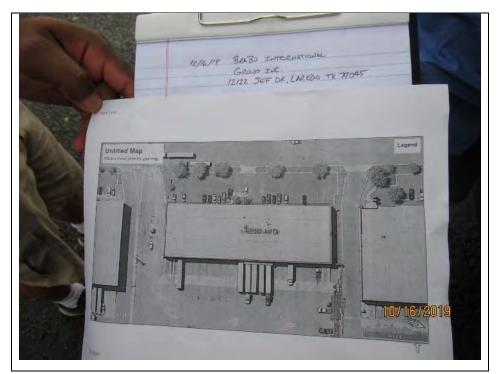


Figure 01. (SRD)



Figure 02. (SRD)

Page 1 of 49 Reviewed: TJI Brabo 002515



Figure 03. (SRD)



Figure 04. (SRD)

Page 2 of 49 Reviewed: TJI Brabo 002516



Figure 05. (SRD)



Figure 06. (SRD)

Page 3 of 49 Reviewed: TJI Brabo 002517

Exterior Photo Log

Figure 07. (SRD)



Figure 08. (SRD)

Reviewed: TJI Page 4 of 49 Brabo 002518



Figure 09. (SRD)



Figure 10. (SRD)

Page **5** of **49** Reviewed: TJI Brabo 002519



Figure 11. (SRD)



Figure 12. (SRD)

Page 6 of 49 Reviewed: TJI Brabo 002520



Figure 13. (SRD)



Figure 14. (SRD)

Page **7** of **49** Reviewed: TJI Brabo 002521

Exterior Photo Log



Figure 15. (SRD)



Figure 16. (SRD)

Page 8 of 49 Reviewed: TJI Brabo 002522

Exterior Photo Log

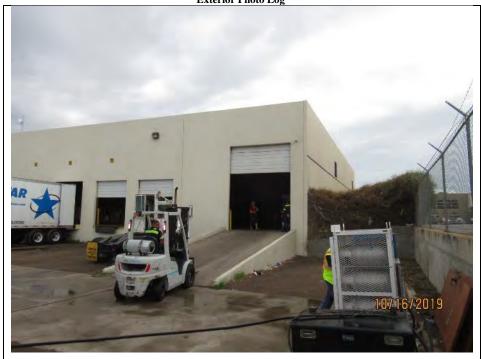


Figure 17. (SRD)



Figure 18. (SRD)

Page **9** of **49** Reviewed: TJI Brabo 002523



Figure 19. (SRD)



Figure 20. (SRD)

Page 10 of 49 Reviewed: TJI Brabo 002524



Figure 21. (SRD)



Figure 22. (SRD)

Page **11** of **49** Reviewed: TJI Brabo 002525



Figure 23. (SRD)



Figure 24. (SRD)

Page 12 of 49 Reviewed: TJI Brabo 002526



Figure 25. (SRD)



Figure 26. (SRD)

Page 13 of 49 Reviewed: TJI Brabo 002527



Figure 27. (SRD)



Figure 28. (SRD)

Page **14** of **49** Reviewed: TJI Brabo 002528



Figure 29. (SRD)



Figure 30. (SRD)

Page **15** of **49** Reviewed: TJI Brabo 002529



Figure 31. (SRD)



Figure 32. (SRD)

Page **16** of **49** Reviewed: TJI Brabo 002530



Figure 33. (SRD)



Figure 34. (SRD)

Page **17** of **49** Reviewed: TJI Brabo 002531



Figure 35. (SRD)

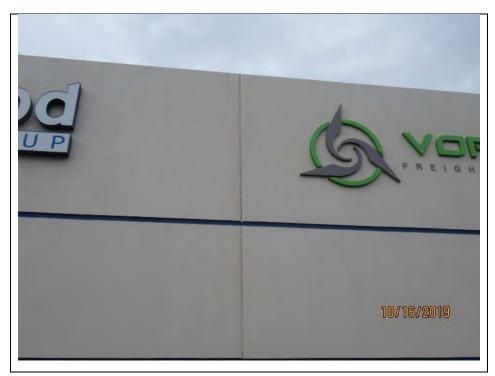


Figure 36. (SRD)

Page 18 of 49 Reviewed: TJI Brabo 002532



Figure 37. (SRD)



Figure 38. (SRD)

Page 19 of 49 Reviewed: TJI Brabo 002533

Exterior Photo Log 10/16/2019

Figure 39. (SRD)



Figure 40. (SRD)

Page 20 of 49 Reviewed: TJI Brabo 002534



Figure 41. (SRD)



Figure 42. (SRD)

Page 21 of 49 Reviewed: TJI Brabo 002535



Figure 43. (SRD)



Figure 44. (SRD)

Page 22 of 49 Reviewed: TJI Brabo 002536



Figure 45. (SRD)



Figure 46. (SRD)

Page 23 of 49 Reviewed: TJI Brabo 002537



Figure 47. (SRD)

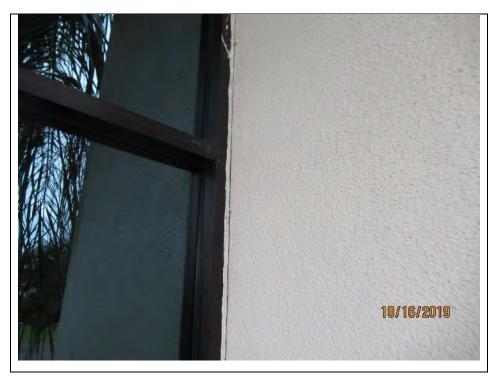


Figure 48. (SRD)

Page **24** of **49** Reviewed: TJI Brabo 002538



Figure 49. (SRD)



Figure 50. (SRD)

Page 25 of 49 Reviewed: TJI Brabo 002539



Figure 51. (SRD)



Figure 52. (SRD)

Page 26 of 49 Reviewed: TJI Brabo 002540

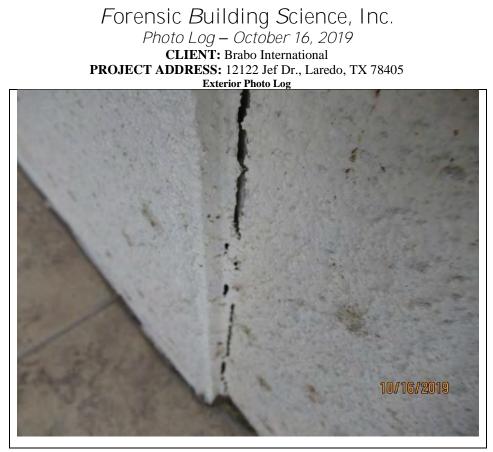


Figure 53. (SRD)



Figure 54. (SRD)

Reviewed: TJI Page **27** of **49** Brabo 002541



Figure 55. (SRD)



Figure 56. (SRD)

Page 28 of 49 Reviewed: TJI Brabo 002542



Figure 57. (SRD)



Figure 58. (SRD)

Page 29 of 49 Reviewed: TJI Brabo 002543



Figure 59. (SRD)



Figure 60. (SRD)

Page **30** of **49** Reviewed: TJI Brabo 002544



Figure 61. (SRD)



Figure 62. (SRD)

Page **31** of **49** Reviewed: TJI Brabo 002545



Figure 63. (SRD)



Figure 64. (SRD)

Page 32 of 49 Reviewed: TJI Brabo 002546



Figure 65. (SRD)

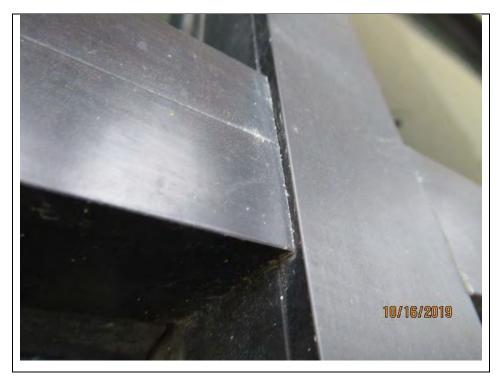


Figure 66. (SRD)

Page 33 of 49 Reviewed: TJI Brabo 002547



Figure 67. (SRD)



Figure 68. (SRD)

Page **34** of **49** Reviewed: TJI Brabo 002548



Figure 69. (SRD)



Figure 70. (SRD)

Page **35** of **49** Reviewed: TJI Brabo 002549



Figure 71. (SRD)



Figure 72. (SRD)

Page **36** of **49** Reviewed: TJI Brabo 002550



Figure 73. (SRD)



Figure 74. (SRD)

Page **37** of **49** Reviewed: TJI Brabo 002551



Figure 75. (SRD)



Figure 76. (SRD)

Page **38** of **49** Reviewed: TJI Brabo 002552



Figure 77. (SRD)



Figure 78. (SRD)

Page **39** of **49** Reviewed: TJI Brabo 002553



Figure 79. (SRD)



Figure 80. (SRD)

Page 40 of 49 Reviewed: TJI Brabo 002554



Figure 81. (SRD)



Figure 82. (SRD)

Page **41** of **49** Reviewed: TJI Brabo 002555



Figure 83. (SRD)



Figure 84. (SRD)

Reviewed: TJI Page **42** of **49** Brabo 002556

Forensic Building Science, Inc. Photo Log – October 16, 2019 CLIENT: Brabo International

PROJECT ADDRESS: 12122 Jef Dr., Laredo, TX 78405



Figure 85. (SRD)



Figure 86. (SRD)

Page 43 of 49 Reviewed: TJI Brabo 002557



Figure 87. (SRD)



Figure 88. (SRD)

Page **44** of **49** Reviewed: TJI Brabo 002558



Figure 89. (SRD)



Figure 90. (SRD)

Page **45** of **49** Reviewed: TJI Brabo 002559



Figure 91. (SRD)



Figure 92. (SRD)

Page **46** of **49** Reviewed: TJI Brabo 002560



Figure 93. (SRD)



Figure 94. (SRD)

Page **47** of **49** Reviewed: TJI Brabo 002561



Figure 95. (SRD)



Figure 96. (SRD)

Page 48 of 49 Reviewed: TJI Brabo 002562



Figure 97. (SRD)

Page **49** of **49** Reviewed: TJI Brabo 002563



Figure 01. (SRD)

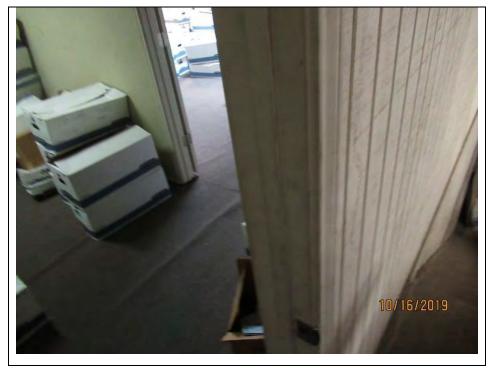


Figure 02. (SRD)

Page 1 of 44 Reviewed: TJI Brabo 002564



Figure 03. (SRD)



Figure 04. (SRD)

Page 2 of 44 Reviewed: TJI Brabo 002565



Figure 05. (SRD)



Figure 06. (SRD)

Page 3 of 44 Reviewed: TJI Brabo 002566



Figure 07. (SRD)



Figure 08. (SRD)

Page 4 of 44 Reviewed: TJI Brabo 002567



Figure 09. (SRD)



Figure 10. (SRD)

Page **5** of **44** Reviewed: TJI Brabo 002568



Figure 11. (SRD)



Figure 12. (SRD)

Page 6 of 44 Reviewed: TJI Brabo 002569



Figure 13. (SRD)



Figure 14. (SRD)

Page **7** of **44** Reviewed: TJI Brabo 002570



Figure 15. (SRD)



Figure 16. (SRD)

Page 8 of 44 Reviewed: TJI Brabo 002571



Figure 17. (SRD)



Figure 18. (SRD)

Page 9 of 44 Reviewed: TJI Brabo 002572



Figure 19. (SRD)



Figure 20. (SRD)

Page 10 of 44 Reviewed: TJI Brabo 002573



Figure 21. (SRD)



Figure 22. (SRD)

Page 11 of 44 Reviewed: TJI Brabo 002574

Interior Photo Log

Figure 23. (SRD)



Figure 24. (SRD)

Page 12 of 44 Reviewed: TJI Brabo 002575

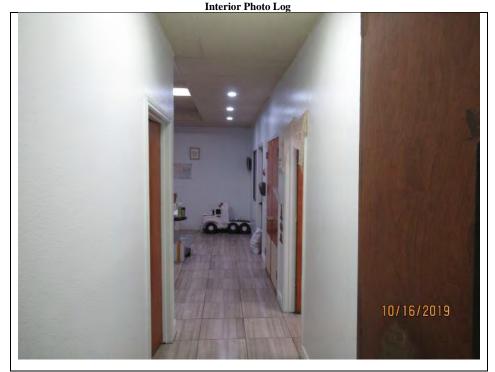


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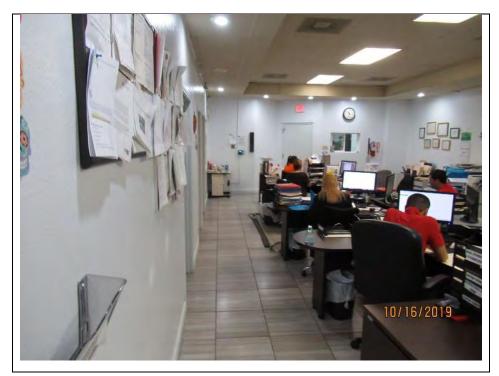


Figure 26. (SRD)

Page 13 of 44 Reviewed: TJI Brabo 002576



Figure 27. (SRD)



Figure 28. (SRD)

Page 14 of 44 Reviewed: TJI Brabo 002577



Figure 29. (SRD)

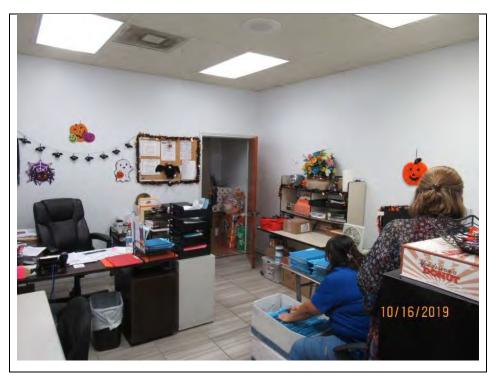


Figure 30. (SRD)

Page 15 of 44 Reviewed: TJI Brabo 002578



Figure 31. (SRD)



Figure 32. (SRD)

Page **16** of **44** Reviewed: TJI Brabo 002579



Figure 33. (SRD)



Figure 34. (SRD)

Page 17 of 44 Reviewed: TJI Brabo 002580



Figure 35. (SRD)



Figure 36. (SRD)

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Forensic Building Science, Inc. Photo Log – October 16, 2019 CLIENT: Brabo International

PROJECT ADDRESS: 12122 Jef Dr., Laredo, TX 78405



Figure 37. (SRD)

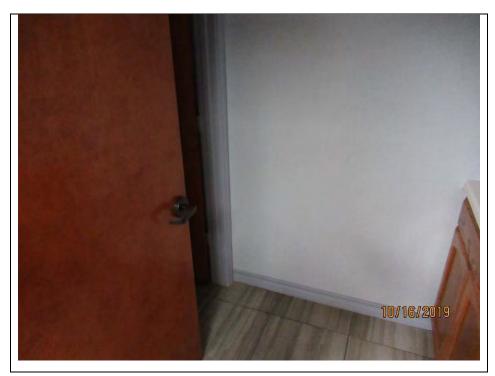


Figure 38. (SRD)

Page 19 of 44 Reviewed: TJI Brabo 002582



Figure 39. (SRD)

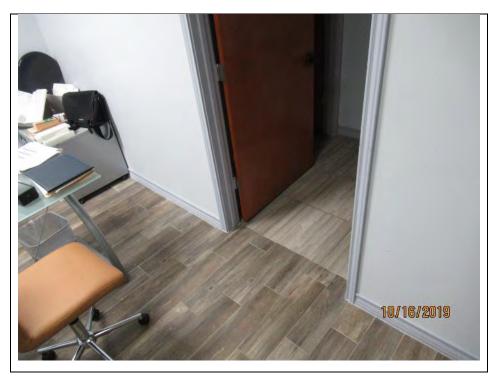


Figure 40. (SRD)

Page 20 of 44 Reviewed: TJI Brabo 002583

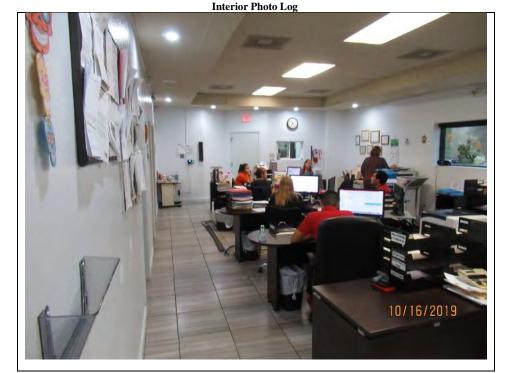


Figure 41. (SRD)

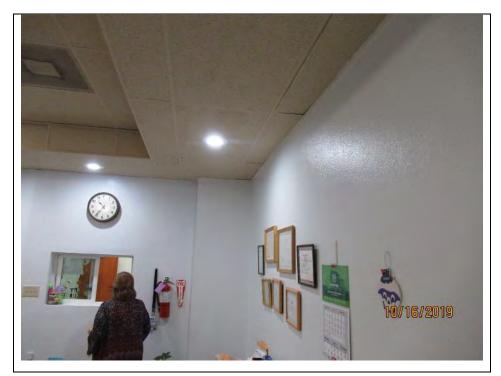


Figure 42. (SRD)

Page **21** of **44** Reviewed: TJI Brabo 002584



Figure 43. (SRD)

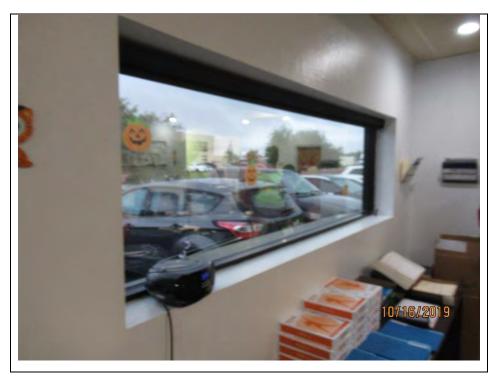


Figure 44. (SRD)

Page 22 of 44 Reviewed: TJI Brabo 002585



Figure 45. (SRD)



Figure 46. (SRD)

Page 23 of 44 Reviewed: TJI Brabo 002586

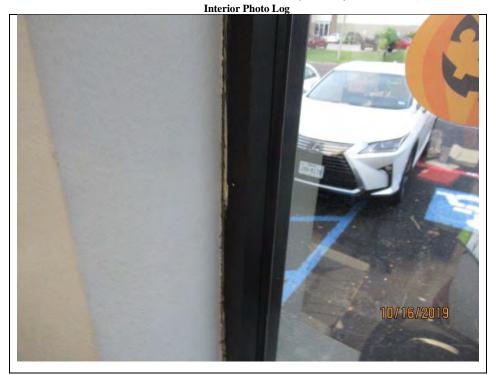


Figure 47. (SRD)

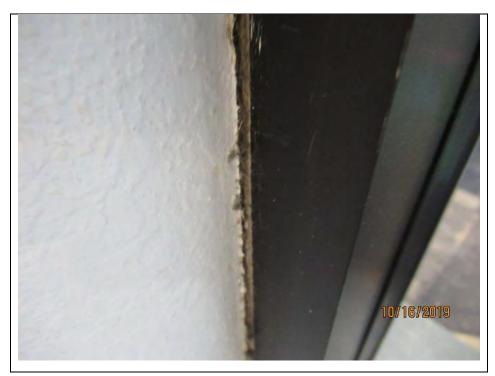


Figure 48. (SRD)

Page 24 of 44 Reviewed: TJI Brabo 002587



Figure 49. (SRD)



Figure 50. (SRD)

Page 25 of 44 Reviewed: TJI Brabo 002588



Figure 51. (SRD)



Figure 52. (SRD)

Page 26 of 44 Reviewed: TJI Brabo 002589

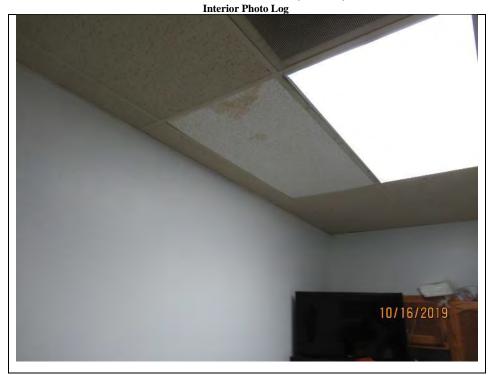


Figure 53. (SRD)



Figure 54. (SRD)

Page 27 of 44 Reviewed: TJI Brabo 002590



Figure 55. (SRD)



Figure 56. (SRD)

Page 28 of 44 Reviewed: TJI Brabo 002591

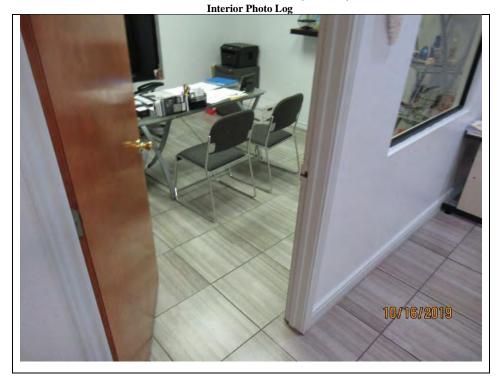


Figure 57. (SRD)



Figure 58. (SRD)

Page 29 of 44 Reviewed: TJI Brabo 002592



Figure 59. (SRD)



Figure 60. (SRD)

Page 30 of 44 Reviewed: TJI Brabo 002593



Figure 61. (SRD)

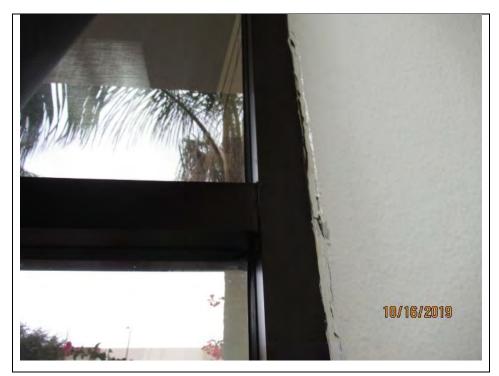


Figure 62. (SRD)

Page **31** of **44** Reviewed: TJI Brabo 002594



Figure 63. (SRD)



Figure 64. (SRD)

Page 32 of 44 Reviewed: TJI Brabo 002595



Figure 65. (SRD)



Figure 66. (SRD)

Page 33 of 44 Reviewed: TJI Brabo 002596



Figure 67. (SRD)



Figure 68. (SRD)

Page **34** of **44** Reviewed: TJI Brabo 002597



Figure 69. (SRD)



Figure 70. (SRD)

Page **35** of **44** Reviewed: TJI Brabo 002598

Interior Photo Log 10/16/2019

Figure 71. (SRD)



Figure 72. (SRD)

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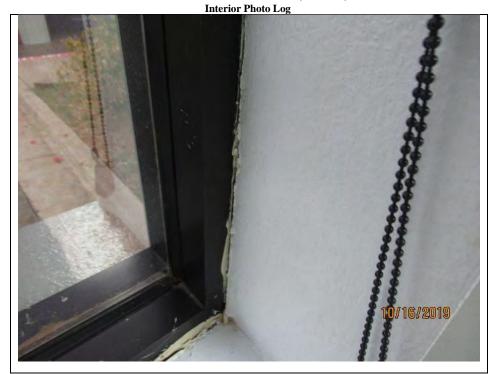


Figure 73. (SRD)



Figure 74. (SRD)

Page **37** of **44** Reviewed: TJI Brabo 002600



Figure 75. (SRD)



Figure 76. (SRD)

Page **38** of **44** Reviewed: TJI Brabo 002601



Figure 77. (SRD)



Figure 78. (SRD)

Page **39** of **44** Reviewed: TJI Brabo 002602



Figure 79. (SRD)



Figure 80. (SRD)

Page 40 of 44 Reviewed: TJI Brabo 002603



Figure 81. (SRD)



Figure 82. (SRD)

Page **41** of **44** Reviewed: TJI Brabo 002604



Figure 83. (SRD)



Figure 84. (SRD)

Page **42** of **44** Reviewed: TJI Brabo 002605



Figure 85. (SRD)



Figure 86. (SRD)

Page 43 of 44 Reviewed: TJI Brabo 002606



Figure 87. (SRD)

Page **44** of **44** Reviewed: TJI Brabo 002607

Interior Warehouse Photo Log



Figure 01. (SRD)



Figure 02. (SRD)

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Figure 03. (SRD)



Figure 04. (SRD)

Page 2 of 90 Reviewed: TJI Brabo 002609

Forensic Building Science, Inc. Photo Log – October 16, 2019 CLIENT: Brabo International PROJECT ADDRESS: 12122 Jef Dr., Laredo, TX 78405 Interior Warehouse Photo Log



Figure 05. (SRD)



Figure 06. (SRD)

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Figure 07. (SRD)



Figure 08. (SRD)

Page 4 of 90 Reviewed: TJI Brabo 002611

Forensic Building Science, Inc. Photo Log – October 16, 2019 CLIENT: Brabo International PROJECT ADDRESS: 12122 Jef Dr., Laredo, TX 78405 Interior Warehouse Photo Log



Figure 09. (SRD)



Figure 10. (SRD)

Page **5** of **90** Reviewed: TJI Brabo 002612



Figure 11. (SRD)



Figure 12. (SRD)

Reviewed: TJI Page 6 of 90 Brabo 002613



Figure 13. (SRD)

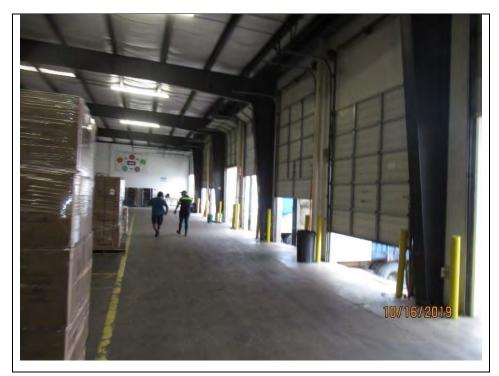


Figure 14. (SRD)

Page **7** of **90** Reviewed: TJI Brabo 002614

Forensic Building Science, Inc. Photo Log – October 16, 2019 CLIENT: Brabo International PROJECT ADDRESS: 12122 Jef Dr., Laredo, TX 78405 Interior Warehouse Photo Log



Figure 15. (SRD)



Figure 16. (SRD)

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Figure 17. (SRD)



Figure 18. (SRD)

Reviewed: TJI Page 9 of 90 Brabo 002616



Figure 19. (SRD)



Figure 20. (SRD)

Reviewed: TJI Page 10 of 90 Brabo 002617



Figure 21. (SRD)



Figure 22. (SRD)

Page 11 of 90 Reviewed: TJI Brabo 002618



Figure 23. (SRD)



Figure 24. (SRD)

Page 12 of 90 Reviewed: TJI Brabo 002619



Figure 25. (SRD)



Figure 26. (SRD)

Page 13 of 90 Reviewed: TJI Brabo 002620



Figure 27. (SRD)



Figure 28. (SRD)

Page **14** of **90** Reviewed: TJI Brabo 002621



Figure 29. (SRD)



Figure 30. (SRD)

Page 15 of 90 Reviewed: TJI Brabo 002622



Figure 31. (SRD)



Figure 32. (SRD)

Page 16 of 90 Reviewed: TJI Brabo 002623



Figure 33. (SRD)



Figure 34. (SRD)

Page 17 of 90 Reviewed: TJI Brabo 002624



Figure 35. (SRD)



Figure 36. (SRD)

Page 18 of 90 Reviewed: TJI Brabo 002625



Figure 37. (SRD)



Figure 38. (SRD)

Page 19 of 90 Reviewed: TJI Brabo 002626



Figure 39. (SRD)



Figure 40. (SRD)

Page 20 of 90 Reviewed: TJI Brabo 002627



Figure 41. (SRD)



Figure 42. (SRD)

Page **21** of **90** Reviewed: TJI Brabo 002628



Figure 43. (SRD)



Figure 44. (SRD)

Page 22 of 90 Reviewed: TJI Brabo 002629



Figure 45. (SRD)



Figure 46. (SRD)

Page 23 of 90 Reviewed: TJI Brabo 002630



Figure 47. (SRD)



Figure 48. (SRD)

Page **24** of **90** Reviewed: TJI Brabo 002631



Figure 49. (SRD)



Figure 50. (SRD)

Page 25 of 90 Reviewed: TJI Brabo 002632



Figure 51. (SRD)



Figure 52. (SRD)

Page **26** of **90** Reviewed: TJI Brabo 002633



Figure 53. (SRD)



Figure 54. (SRD)

Page 27 of 90 Reviewed: TJI Brabo 002634



Figure 55. (SRD)



Figure 56. (SRD)

Page 28 of 90 Reviewed: TJI Brabo 002635

Interior Warehouse Photo Log

Figure 57. (SRD)



Figure 58. (SRD)

Page 29 of 90 Reviewed: TJI Brabo 002636



Figure 59. (SRD)



Figure 60. (SRD)

Page 30 of 90 Reviewed: TJI Brabo 002637



Figure 61. (SRD)



Figure 62. (SRD)

Page **31** of **90** Reviewed: TJI Brabo 002638



Figure 63. (SRD)



Figure 64. (SRD)

Page 32 of 90 Reviewed: TJI Brabo 002639



Figure 65. (SRD)



Figure 66. (SRD)

Page **33** of **90** Reviewed: TJI Brabo 002640



Figure 67. (SRD)



Figure 68. (SRD)

Page **34** of **90** Reviewed: TJI Brabo 002641



Figure 69. (SRD)



Figure 70. (SRD)

Page **35** of **90** Reviewed: TJI Brabo 002642

Interior Warehouse Photo Log 10//1<mark>6/2</mark>019

Figure 71. (SRD)



Figure 72. (SRD)

Page **36** of **90** Reviewed: TJI Brabo 002643



Figure 73. (SRD)



Figure 74. (SRD)

Page **37** of **90** Reviewed: TJI Brabo 002644

Interior Warehouse Photo Log



Figure 75. (SRD)



Figure 76. (SRD)

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Interior Warehouse Photo Log 10/16/2019

Figure 77. (SRD)



Figure 78. (SRD)

Page **39** of **90** Reviewed: TJI Brabo 002646



Figure 79. (SRD)



Figure 80. (SRD)

Page **40** of **90** Reviewed: TJI Brabo 002647



Figure 81. (SRD)



Figure 82. (SRD)

Page **41** of **90** Reviewed: TJI Brabo 002648



Figure 83. (SRD)



Figure 84. (SRD)

Page **42** of **90** Reviewed: TJI Brabo 002649



Figure 85. (SRD)



Figure 86. (SRD)

Page **43** of **90** Reviewed: TJI Brabo 002650



Figure 87. (SRD)



Figure 88. (SRD)

Page **44** of **90** Reviewed: TJI Brabo 002651



Figure 89. (SRD)



Figure 90. (SRD)

Page **45** of **90** Reviewed: TJI Brabo 002652



Figure 91. (SRD)

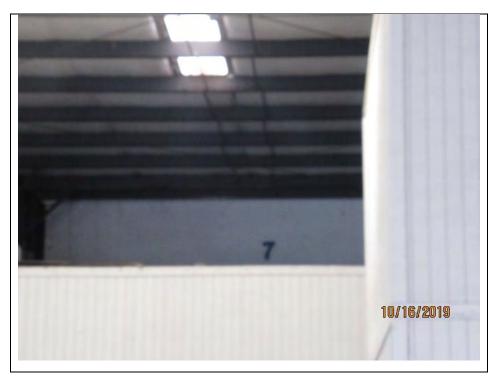


Figure 92. (SRD)

Page **46** of **90** Reviewed: TJI Brabo 002653

Forensic Building Science, Inc. Photo Log – October 16, 2019 CLIENT: Brabo International PROJECT ADDRESS: 12122 Jef Dr., Laredo, TX 78405 Interior Warehouse Photo Log



Figure 93. (SRD)



Figure 94. (SRD)

Page **47** of **90** Reviewed: TJI Brabo 002654



Figure 95. (SRD)



Figure 96. (SRD)

Page **48** of **90** Reviewed: TJI Brabo 002655



Figure 97. (SRD)



Figure 98. (SRD)

Page **49** of **90** Reviewed: TJI Brabo 002656



Figure 99. (SRD)



Figure 100. (SRD)

Page **50** of **90** Reviewed: TJI Brabo 002657



Figure 101. (SRD)



Figure 102. (SRD)

Page **51** of **90** Reviewed: TJI Brabo 002658



Figure 103. (SRD)



Figure 104. (SRD)

Page **52** of **90** Reviewed: TJI Brabo 002659



Figure 105. (SRD)



Figure 106. (SRD)

Page **53** of **90** Reviewed: TJI Brabo 002660

Interior Warehouse Photo Log

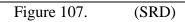




Figure 108. (SRD)

Page **54** of **90** Reviewed: TJI Brabo 002661



Figure 109. (SRD)



Figure 110. (SRD)

Reviewed: TJI Page **55** of **90** Brabo 002662

Forensic Building Science, Inc. Photo Log – October 16, 2019 CLIENT: Brabo International PROJECT ADDRESS: 12122 Jef Dr., Laredo, TX 78405 Interior Warehouse Photo Log



Figure 111. (SRD)



Figure 112. (SRD)

Page **56** of **90** Reviewed: TJI Brabo 002663



Figure 113. (SRD)



(SRD) Figure 114.

Page **57** of **90** Reviewed: TJI Brabo 002664



Figure 115. (SRD)



Figure 116. (SRD)

Page **58** of **90** Reviewed: TJI Brabo 002665



Figure 117. (SRD)



Figure 118. (SRD)

Page **59** of **90** Reviewed: TJI Brabo 002666



Figure 119. (SRD)



Figure 120. (SRD)

Page **60** of **90** Reviewed: TJI Brabo 002667



Figure 121. (SRD)



Figure 122. (SRD)

Page **61** of **90** Reviewed: TJI Brabo 002668



Figure 123. (SRD)



Figure 124. (SRD)

Page **62** of **90** Reviewed: TJI Brabo 002669



Figure 125. (SRD)



Figure 126. (SRD)

Page **63** of **90** Reviewed: TJI Brabo 002670

Forensic Building Science, Inc. Photo Log – October 16, 2019 CLIENT: Brabo International PROJECT ADDRESS: 12122 Jef Dr., Laredo, TX 78405 Interior Warehouse Photo Log



Figure 127. (SRD)



Figure 128. (SRD)

Page **64** of **90** Reviewed: TJI Brabo 002671



Figure 129. (SRD)



Figure 130. (SRD)

Page **65** of **90** Reviewed: TJI Brabo 002672



Figure 131. (SRD)



Figure 132. (SRD)

Page **66** of **90** Reviewed: TJI Brabo 002673



Figure 133. (SRD)



Figure 134. (SRD)

Page **67** of **90** Reviewed: TJI Brabo 002674



(SRD) Figure 135.



Figure 136. (SRD)

Page **68** of **90** Reviewed: TJI Brabo 002675



Figure 137. (SRD)



Figure 138. (SRD)

Page **69** of **90** Reviewed: TJI Brabo 002676



Figure 139. (SRD)



Figure 140. (SRD)

Page **70** of **90** Reviewed: TJI Brabo 002677



Figure 141. (SRD)



Figure 142. (SRD)

Page **71** of **90** Reviewed: TJI Brabo 002678



Figure 143. (SRD)



Figure 144. (SRD)

Page **72** of **90** Reviewed: TJI Brabo 002679

Interior Warehouse Photo Log



Figure 145. (SRD)



Figure 146. (SRD)

Page **73** of **90** Reviewed: TJI Brabo 002680



Figure 147. (SRD)



Figure 148. (SRD)

Page **74** of **90** Reviewed: TJI Brabo 002681



Figure 149. (SRD)



Figure 150. (SRD)

Reviewed: TJI Page **75** of **90** Brabo 002682



Figure 151. (SRD)



Figure 152. (SRD)

Page **76** of **90** Reviewed: TJI Brabo 002683



Figure 153. (SRD)



Figure 154. (SRD)

Page **77** of **90** Reviewed: TJI Brabo 002684



(SRD) Figure 155.



Figure 156. (SRD)

Page **78** of **90** Reviewed: TJI Brabo 002685



Figure 157. (SRD)



Figure 158. (SRD)

Page **79** of **90** Reviewed: TJI Brabo 002686



Figure 159. (SRD)



Figure 160. (SRD)

Page **80** of **90** Reviewed: TJI Brabo 002687



Figure 161. (SRD)



Figure 162. (SRD)

Page **81** of **90** Reviewed: TJI Brabo 002688



Figure 163. (SRD)



Figure 164. (SRD)

Page **82** of **90** Reviewed: TJI Brabo 002689



Figure 165. (SRD)



Figure 166. (SRD)

Page **83** of **90** Reviewed: TJI Brabo 002690



Figure 167. (SRD)



Figure 168. (SRD)

Page **84** of **90** Reviewed: TJI Brabo 002691



Figure 169. (SRD)



Figure 170. (SRD)

Page **85** of **90** Reviewed: TJI Brabo 002692



Figure 171. (SRD)



Figure 172. (SRD)

Reviewed: TJI Page **86** of **90** Brabo 002693



Figure 173. (SRD)



Figure 174. (SRD)

Reviewed: TJI Page **87** of **90** Brabo 002694



Figure 175. (SRD)



Figure 176. (SRD)

Reviewed: TJI Page **88** of **90** Brabo 002695



Figure 177. (SRD)



Figure 178. (SRD)

Page **89** of **90** Reviewed: TJI Brabo 002696

Interior Warehouse Photo Log 10/16/2019

Figure 179. (SRD)



Figure 180. (SRD)

Page **90** of **90** Reviewed: TJI Brabo 002697

Forensic Building Science, Inc.

Photo Log – October 16, 2019

CLIENT: Brabo International

PROJECT ADDRESS: 12122 Jef Dr., Laredo, TX 78405 Infra-Red Photo Log



Figure 01. (KJS)

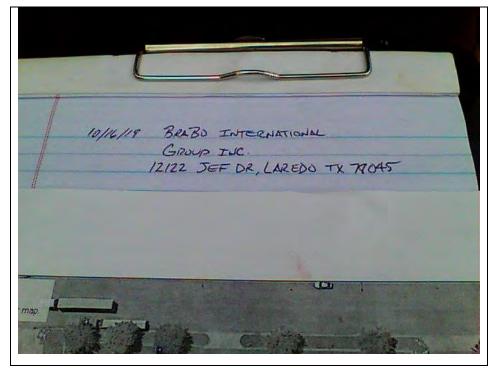


Figure 02. (KJS)

Reviewed: TJI Page 1 of 34
Brabo 002698

Infra-Red Photo Log 83.5 76.2 **ĢFLIR**

Figure 03. (KJS)



Figure 04. (KJS)

Page 2 of 34 Reviewed: TJI Brabo 002699

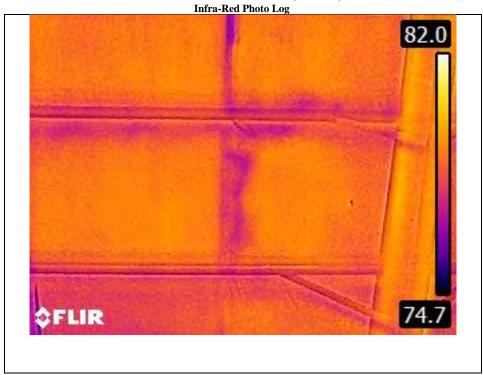


Figure 05. (KJS)



Figure 06. (KJS)

Page 3 of 34 Reviewed: TJI Brabo 002700



Figure 07. (KJS)



Figure 08. (KJS)

Page 4 of 34 Reviewed: TJI Brabo 002701

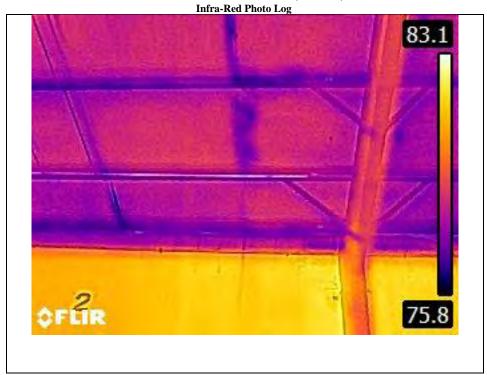


Figure 09. (KJS)



Figure 10. (KJS)

Page **5** of **34** Reviewed: TJI Brabo 002702

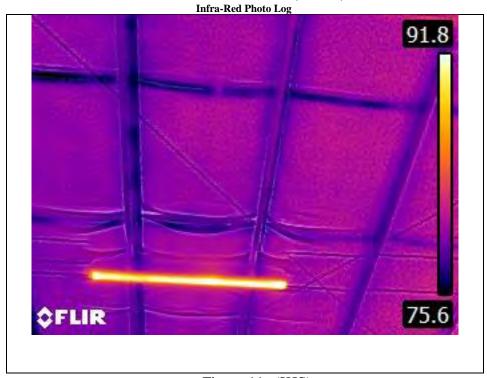


Figure 11. (KJS)



Figure 12. (KJS)

Page 6 of 34 Reviewed: TJI Brabo 002703



Figure 13. (KJS)



Figure 14. (KJS)

Page 7 of 34 Reviewed: TJI Brabo 002704



Figure 15. (KJS)



Figure 16. (KJS)

Reviewed: TJI Page 8 of 34 Brabo 002705



Figure 17. (KJS)



Figure 18. (KJS)

Reviewed: TJI Page 9 of 34 Brabo 002706



Figure 19. (KJS)



Figure 20. (KJS)

Page 10 of 34 Reviewed: TJI Brabo 002707

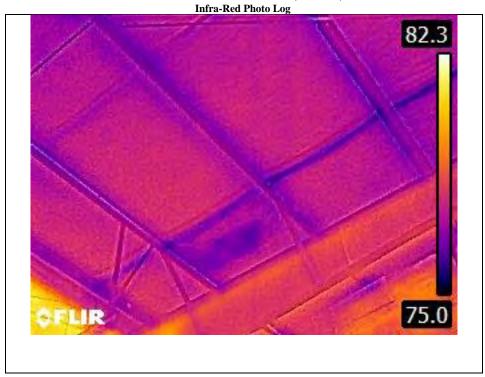


Figure 21. (KJS)



Figure 22. (KJS)

Reviewed: TJI Page 11 of 34 Brabo 002708

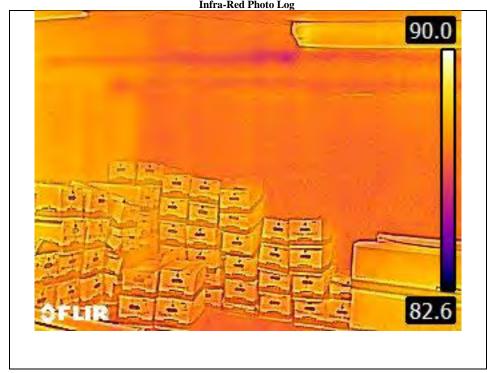


Figure 23. (KJS)



Figure 24. (KJS)

Page 12 of 34 Reviewed: TJI Brabo 002709



Figure 25. (KJS)



Figure 26. (KJS)

Page 13 of 34 Reviewed: TJI Brabo 002710

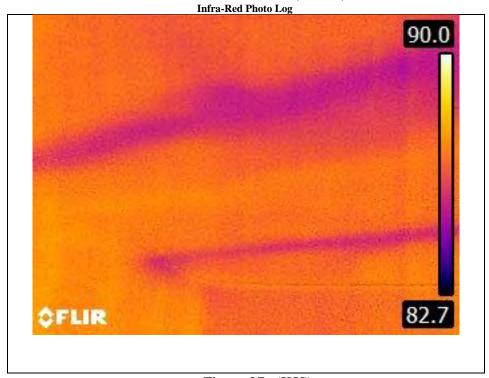


Figure 27. (KJS)

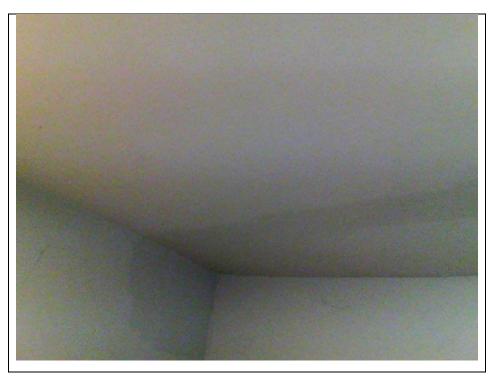


Figure 28. (KJS)

Page 14 of 34 Reviewed: TJI Brabo 002711

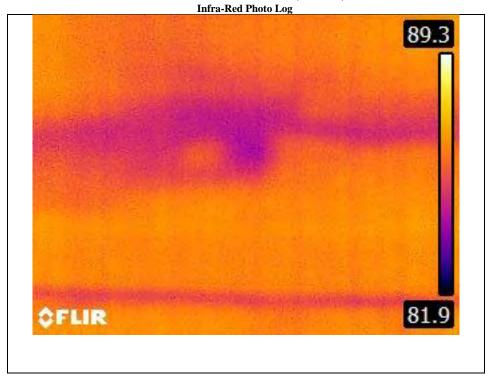


Figure 29. (KJS)



Figure 30. (KJS)

Page 15 of 34 Reviewed: TJI Brabo 002712

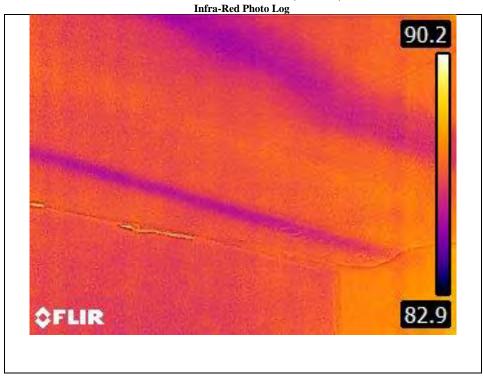


Figure 31. (KJS)



Figure 32. (KJS)

Page 16 of 34 Reviewed: TJI Brabo 002713

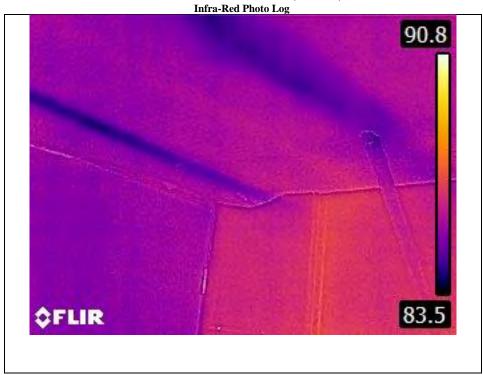


Figure 33. (KJS)



Figure 34. (KJS)

Page 17 of 34 Reviewed: TJI Brabo 002714

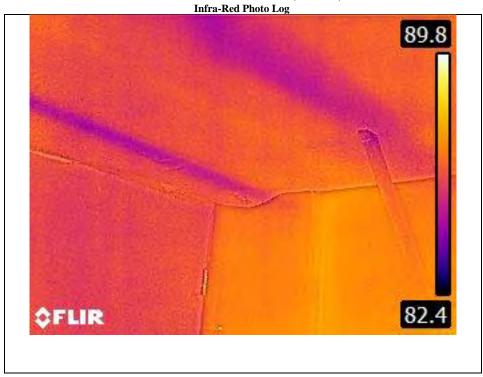


Figure 35. (KJS)



Figure 36. (KJS)

Page 18 of 34 Reviewed: TJI Brabo 002715

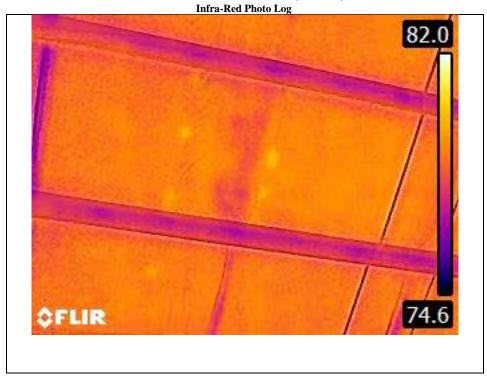


Figure 37. (KJS)



Figure 38. (KJS)

Page 19 of 34 Reviewed: TJI Brabo 002716



Figure 39. (KJS)



Figure 40. (KJS)

Page 20 of 34 Reviewed: TJI Brabo 002717

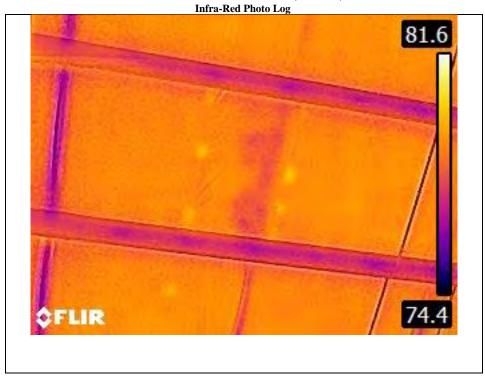


Figure 41. (KJS)



Figure 42. (KJS)

Page 21 of 34 Reviewed: TJI Brabo 002718

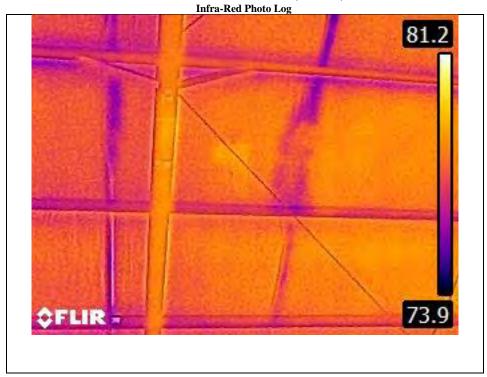


Figure 43. (KJS)



Figure 44. (KJS)

Page 22 of 34 Reviewed: TJI Brabo 002719



Figure 45. (KJS)



Figure 46. (KJS)

Page 23 of 34 Reviewed: TJI Brabo 002720

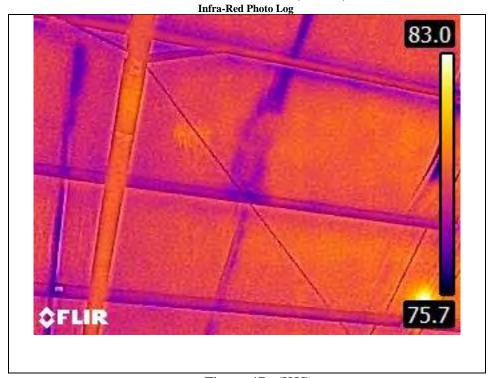


Figure 47. (KJS)



Figure 48. (KJS)

Page 24 of 34 Reviewed: TJI Brabo 002721



Figure 49. (KJS)



Figure 50. (KJS)

Page 25 of 34 Reviewed: TJI Brabo 002722



Figure 51. (KJS)



Figure 52. (KJS)

Page 26 of 34 Reviewed: TJI Brabo 002723



Figure 53. (KJS)



Figure 54. (KJS)

Page 27 of 34 Reviewed: TJI Brabo 002724



Figure 55. (KJS)



Figure 56. (KJS)

Page 28 of 34 Reviewed: TJI Brabo 002725



Figure 57. (KJS)



Figure 58. (KJS)

Page 29 of 34 Reviewed: TJI Brabo 002726



Figure 59. (KJS)



Figure 60. (KJS)

Page **30** of **34** Reviewed: TJI Brabo 002727

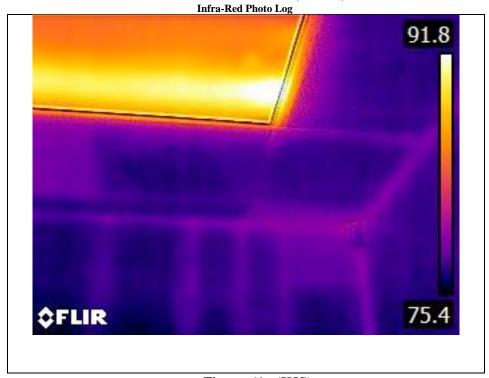


Figure 61. (KJS)



Figure 62. (KJS)

Page **31** of **34** Reviewed: TJI Brabo 002728



Figure 63. (KJS)



Figure 64. (KJS)

Page 32 of 34 Reviewed: TJI Brabo 002729

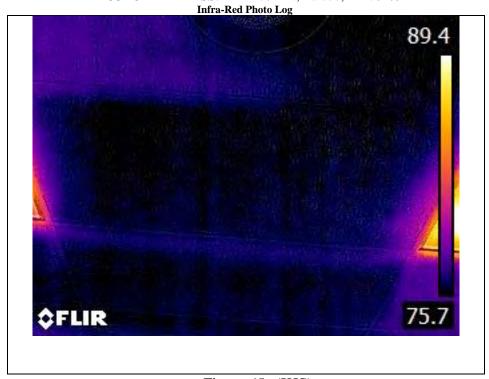


Figure 65. (KJS)



Figure 66. (KJS)

Page 33 of 34 Reviewed: TJI Brabo 002730

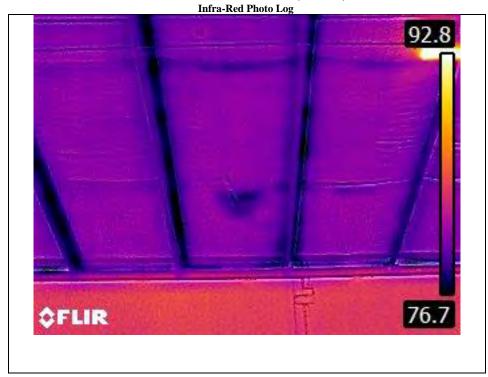


Figure 67. (KJS)



Figure 68. (KJS)

Page **34** of **34** Reviewed: TJI Brabo 002731



Figure 01. (SRD)



Figure 02. (SRD)

Page 1 of 92 Reviewed: TJI Brabo 002732

Forensic Building Science, Inc. Photo Log – October 16, 2019 CLIENT: Brabo International

PROJECT ADDRESS: 12122 Jef Dr., Laredo, TX 78405



Figure 03. (SRD)



Figure 04. (SRD)

Page 2 of 92 Reviewed: TJI Brabo 002733



Figure 05. (SRD)



Figure 06. (SRD)

Page 3 of 92 Reviewed: TJI Brabo 002734



Figure 07. (SRD)



Figure 08. (SRD)

Page 4 of 92 Reviewed: TJI Brabo 002735



Figure 09. (SRD)



Figure 10. (SRD)

Reviewed: TJI Page **5** of **92** Brabo 002736



Figure 11. (SRD)



Figure 12. (SRD)

Page 6 of 92 Reviewed: TJI Brabo 002737



Figure 13. (SRD)



Figure 14. (SRD)

Reviewed: TJI Page **7** of **92** Brabo 002738

10/16/2019

Figure 15. (SRD)



Figure 16. (SRD)

Reviewed: TJI Page 8 of 92 Brabo 002739



Figure 17. (SRD)



Figure 18. (SRD)

Page 9 of 92 Reviewed: TJI Brabo 002740



Figure 19. (SRD)



Figure 20. (SRD)

Page 10 of 92 Reviewed: TJI Brabo 002741



Figure 21. (SRD)



Figure 22. (SRD)

Reviewed: TJI Page **11** of **92** Brabo 002742



Figure 23. (SRD)



Figure 24. (SRD)

Page 12 of 92 Reviewed: TJI Brabo 002743



Figure 25. (SRD)



Figure 26. (SRD)

Page 13 of 92 Reviewed: TJI Brabo 002744



Figure 27. (SRD)



Figure 28. (SRD)

Page 14 of 92 Reviewed: TJI Brabo 002745



Figure 29. (SRD)



Figure 30. (SRD)

Page 15 of 92 Reviewed: TJI Brabo 002746



Figure 31. (SRD)



Figure 32. (SRD)

Page **16** of **92** Reviewed: TJI Brabo 002747



Figure 33. (SRD)

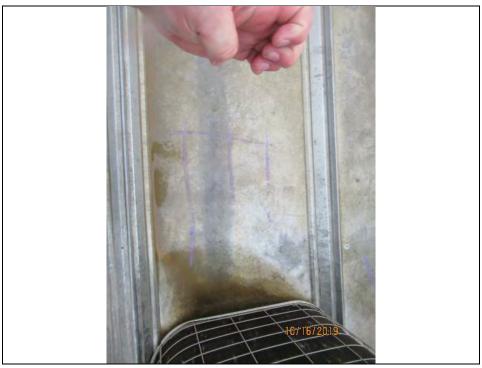


Figure 34. (SRD)

Page 17 of 92 Reviewed: TJI Brabo 002748

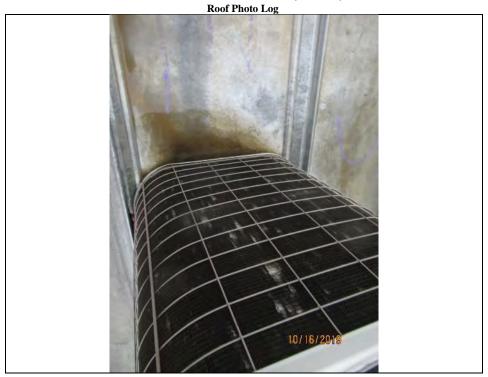


Figure 35. (SRD)



Figure 36. (SRD)

Page 18 of 92 Reviewed: TJI Brabo 002749



Figure 37. (SRD)



Figure 38. (SRD)

Page 19 of 92 Reviewed: TJI Brabo 002750



Figure 39. (SRD)



Figure 40. (SRD)

Page 20 of 92 Reviewed: TJI Brabo 002751



Figure 41. (SRD)



Figure 42. (SRD)

Page 21 of 92 Reviewed: TJI Brabo 002752



Figure 43. (SRD)



Figure 44. (SRD)

Page 22 of 92 Reviewed: TJI Brabo 002753



Figure 45. (SRD)



Figure 46. (SRD)

Reviewed: TJI Page 23 of 92 Brabo 002754



Figure 47. (SRD)



Figure 48. (SRD)

Page **24** of **92** Reviewed: TJI Brabo 002755



Figure 49. (SRD)



Figure 50. (SRD)

Page 25 of 92 Reviewed: TJI Brabo 002756



Figure 51. (SRD)



Figure 52. (SRD)

Page 26 of 92 Reviewed: TJI Brabo 002757



Figure 53. (SRD)



Figure 54. (SRD)

Reviewed: TJI Page **27** of **92** Brabo 002758



Figure 55. (SRD)



Figure 56. (SRD)

Page 28 of 92 Reviewed: TJI Brabo 002759



Figure 57. (SRD)



Figure 58. (SRD)

Page **29** of **92** Reviewed: TJI Brabo 002760



Figure 59. (SRD)



Figure 60. (SRD)

Page 30 of 92 Reviewed: TJI Brabo 002761

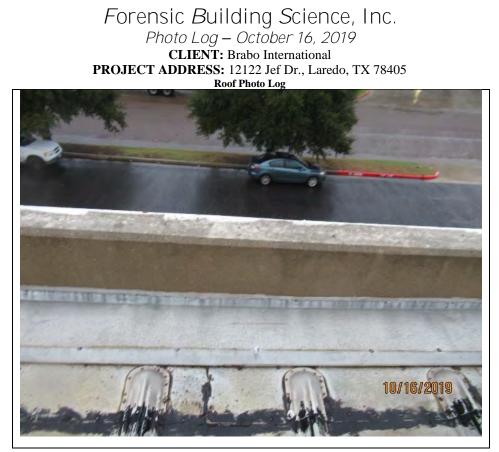


Figure 61. (SRD)



Figure 62. (SRD)

Page **31** of **92** Reviewed: TJI Brabo 002762



Figure 63. (SRD)



Figure 64. (SRD)

Page 32 of 92 Reviewed: TJI Brabo 002763

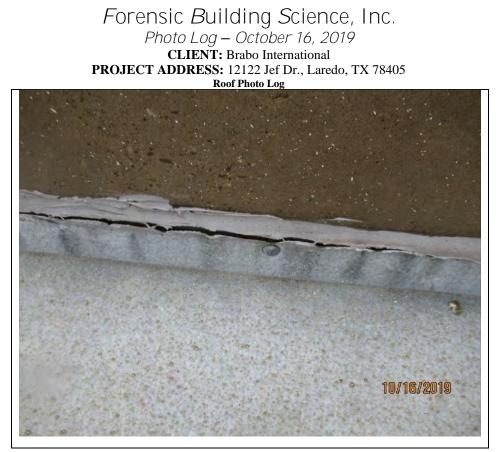


Figure 65. (SRD)



Figure 66. (SRD)

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Figure 67. (SRD)



Figure 68. (SRD)

Page **34** of **92** Reviewed: TJI Brabo 002765



Figure 69. (SRD)



Figure 70. (SRD)

Page **35** of **92** Reviewed: TJI Brabo 002766



Figure 71. (SRD)



Figure 72. (SRD)

Page **36** of **92** Reviewed: TJI Brabo 002767



Figure 73. (SRD)



Figure 74. (SRD)

Page **37** of **92** Reviewed: TJI Brabo 002768



Figure 75. (SRD)



Figure 76. (SRD)

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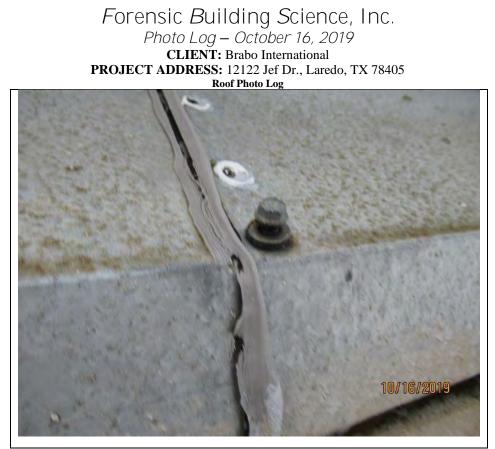


Figure 77. (SRD)



Figure 78. (SRD)

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Figure 79. (SRD)



Figure 80. (SRD)

Reviewed: TJI Page 40 of 92 Brabo 002771



Figure 81. (SRD)



Figure 82. (SRD)

Page **41** of **92** Reviewed: TJI Brabo 002772



Figure 83. (SRD)



Figure 84. (SRD)

Reviewed: TJI Page **42** of **92** Brabo 002773



Figure 85. (SRD)



Figure 86. (SRD)

Page **43** of **92** Reviewed: TJI Brabo 002774



Figure 87. (SRD)



Figure 88. (SRD)

Page **44** of **92** Reviewed: TJI Brabo 002775



Figure 89. (SRD)



Figure 90. (SRD)

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Figure 91. (SRD)



Figure 92. (SRD)

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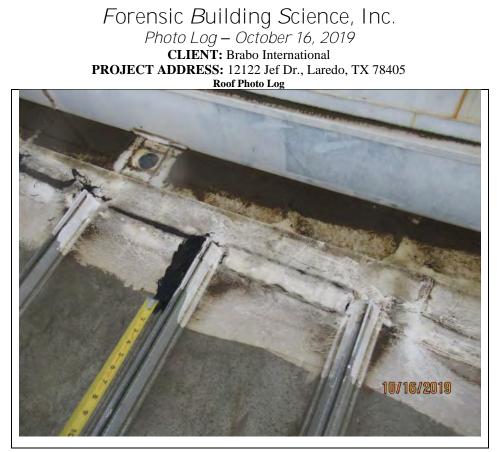


Figure 93. (SRD)



Figure 94. (SRD)

Page **47** of **92** Reviewed: TJI Brabo 002778



Figure 95. (SRD)



Figure 96. (SRD)

Reviewed: TJI Page **48** of **92** Brabo 002779



Figure 97. (SRD)



Figure 98. (SRD)

Reviewed: TJI Page **49** of **92** Brabo 002780



Figure 99. (SRD)



Figure 100. (SRD)

Page **50** of **92** Reviewed: TJI Brabo 002781



Figure 101. (SRD)



Figure 102. (SRD)

Page **51** of **92** Reviewed: TJI Brabo 002782



Figure 103. (SRD)



Figure 104. (SRD)

Page **52** of **92** Reviewed: TJI Brabo 002783



Figure 105. (SRD)



Figure 106. (SRD)

Page **53** of **92** Reviewed: TJI Brabo 002784



Figure 107. (SRD)



Figure 108. (SRD)

Page **54** of **92** Reviewed: TJI Brabo 002785



Figure 109. (SRD)



Figure 110. (SRD)

Page **55** of **92** Reviewed: TJI Brabo 002786



Figure 111. (SRD)



Figure 112. (SRD)

Page **56** of **92** Reviewed: TJI Brabo 002787



Figure 113. (SRD)



Figure 114. (SRD)

Page **57** of **92** Reviewed: TJI Brabo 002788



Figure 115. (SRD)



Figure 116. (SRD)

Page **58** of **92** Reviewed: TJI Brabo 002789



Figure 117. (SRD)

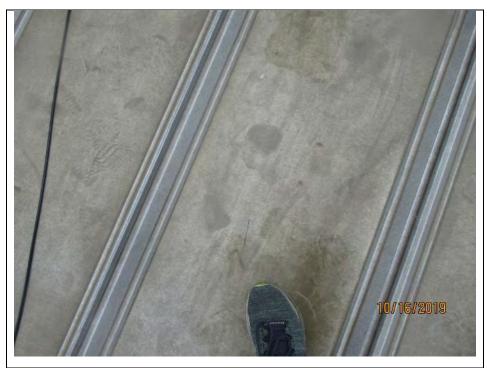


Figure 118. (SRD)

Reviewed: TJI Page **59** of **92** Brabo 002790



Figure 119. (SRD)



Figure 120. (SRD)

Reviewed: TJI Page **60** of **92** Brabo 002791



Figure 121. (SRD)



Figure 122. (SRD)

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Figure 123. (SRD)



Figure 124. (SRD)

Page **62** of **92** Reviewed: TJI Brabo 002793



Figure 125. (SRD)



Figure 126. (SRD)

Reviewed: TJI Page **63** of **92** Brabo 002794

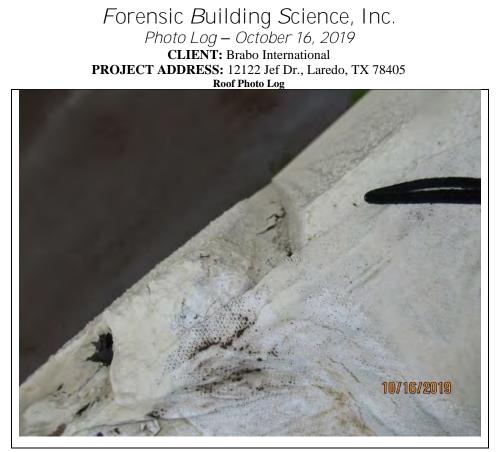


Figure 127. (SRD)



Figure 128. (SRD)

Reviewed: TJI Page **64** of **92** Brabo 002795



Figure 129. (SRD)



Figure 130. (SRD)

Page **65** of **92** Reviewed: TJI Brabo 002796



Figure 131. (SRD)



Figure 132. (SRD)

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Figure 133. (SRD)



Figure 134. (SRD)

Page **67** of **92** Reviewed: TJI Brabo 002798

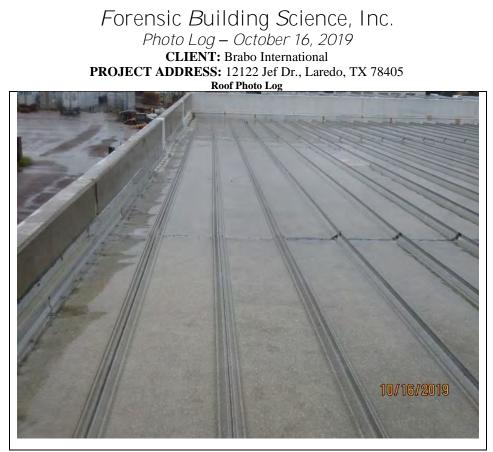


Figure 135. (SRD)



Figure 136. (SRD)

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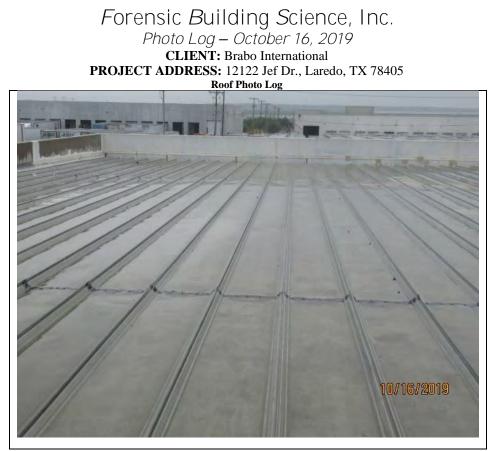


Figure 137. (SRD)



Figure 138. (SRD)

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Figure 139. (SRD)



Figure 140. (SRD)

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Figure 141. (SRD)



Figure 142. (SRD)

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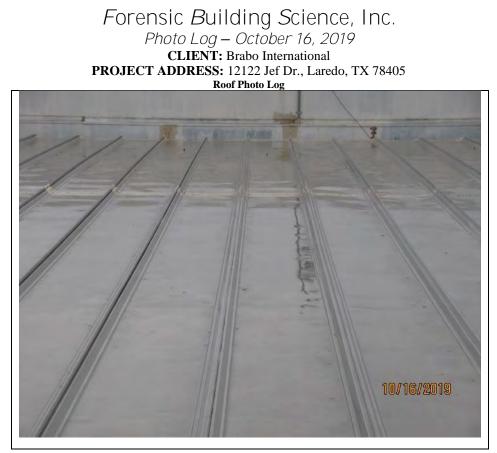


Figure 143. (SRD)



Figure 144. (SRD)

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Figure 145. (SRD)



Figure 146. (SRD)

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Figure 147. (SRD)



Figure 148. (SRD)

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Figure 149. (SRD)



Figure 150. (SRD)

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Figure 151. (SRD)



Figure 152. (SRD)

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Figure 153. (SRD)



Figure 154. (SRD)

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Figure 155. (SRD)



Figure 156. (SRD)

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Figure 157. (SRD)



Figure 158. (SRD)

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Figure 159. (SRD)



Figure 160. (SRD)

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Figure 161. (SRD)



Figure 162. (SRD)

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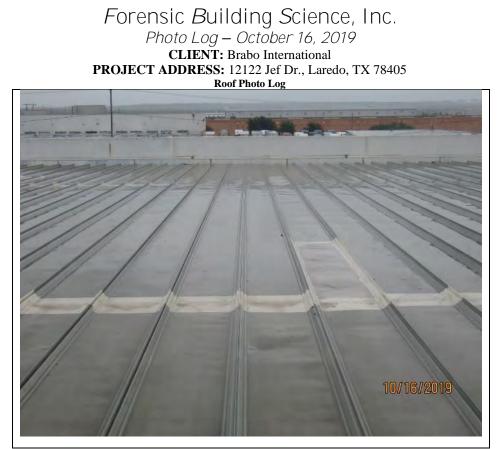


Figure 163. (SRD)



Figure 164. (SRD)

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Figure 165. (SRD)



Figure 166. (SRD)

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Figure 167. (SRD)



Figure 168. (SRD)

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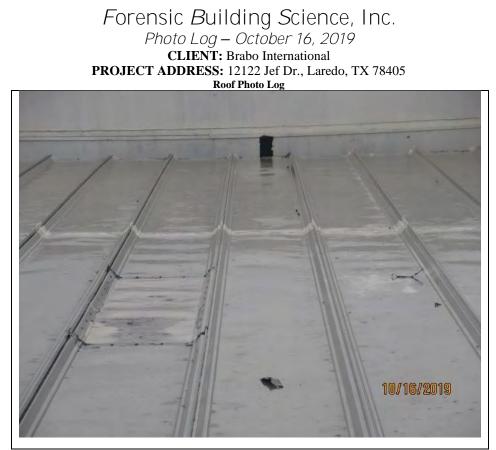


Figure 169. (SRD)



Figure 170. (SRD)

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Figure 171. (SRD)



Figure 172. (SRD)

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Figure 173. (SRD)



Figure 174. (SRD)

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Figure 175. (SRD)



Figure 176. (SRD)

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Figure 177. (SRD)



Figure 178. (SRD)

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Figure 179. (SRD)



Figure 180. (SRD)

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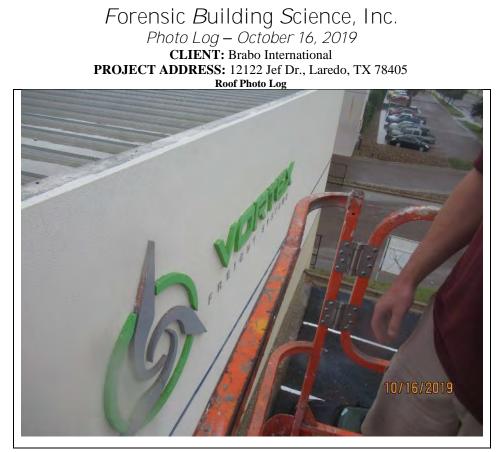


Figure 181. (SRD)



Figure 182. (SRD)

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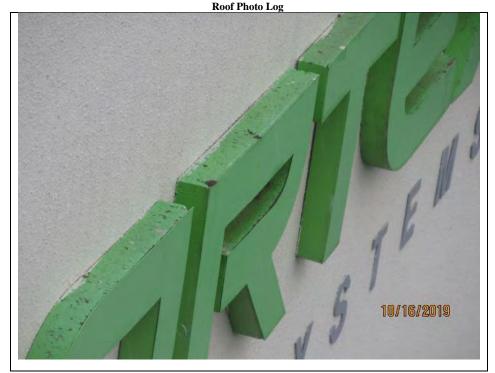


Figure 183. (SRD)



Figure 184. (SRD)

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